

# A systematic cross-search for radio/infrared counterparts of XMM-Newton sources

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**Abstract** We present a catalog of cross-correlated radio, infrared and X-ray sources using a very restrictive selection criteria with an IDL-based code developed by us. The significance of the observed coincidences was evaluated through Monte Carlo simulations of synthetic sources following a well-tested protocol. We found 3320 coincident radio/X-ray sources with a high statistical significance characterized by the sum of error-weighted coordinate differences. For 997 of them, 2MASS counterparts were found. The percentage of chance coincidences is less than 1%. X-ray hardness ratios of well-known populations of objects were used to provide a

crude representation of their X-ray spectrum and to make a preliminary diagnosis of the possible nature of unidentified X-ray sources. The results support the fact that the X-ray sky is largely dominated by Active Galactic Nuclei at high galactic latitudes ( $|b| \geq 10^\circ$ ). At low galactic latitudes ( $|b| \leq 10^\circ$ ) most of unidentified X-ray sources ( $\sim 94\%$ ) lie at  $|b| \leq 2^\circ$ . This result suggests that most of the unidentified sources found toward the Milky Way plane are galactic objects. Well-known and unidentified sources were classified in different tables with their corresponding radio/infrared and X-ray properties. These tables are intended as a useful tool for researchers interested in particular identifications.

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## 1 Introduction

Understanding the nature of the galactic and extragalactic X-ray sources and the physical phenomena that produce the emission is one of the main goals of modern astrophysics. Astrophysical systems emitting at high energies are usually complex, comprising objects or media capable of emitting over different ranges of the electromagnetic spectrum (e.g. Fabbiano 2006). Multi-wavelength analyses are needed to disentangle and characterize the different components of such astrophysical systems.

The last generation of high-sensitivity X-ray observatories, like *Chandra* and *XMM-Newton*, have led to the detection of large samples of X-ray sources (Watson et al. 2009). These observatories provide a new and more detailed view of the X-ray Universe having an impact on our understanding of different populations of high-energy objects. In past years several stud-



ies of X-ray sources, at high and middle galactic latitude, have been carried out to investigate various statistical properties of X-ray sources (Severgnini et al. 2003; Mateos et al. 2005; Carrera et al. 2007; Caccianiga et al. 2007; Mateos et al. 2008; Della Ceca et al. 2004, 2008; Ebrero et al. 2009). Type 1 AGNs (Seyferts) seem to be the dominating population, but type 2 AGNs, absorption-line galaxies, clusters of galaxies, and stars also contribute to the total number of detected sources (Barcons et al. 2002, 2007; Barcons & Negueruela 2003; Micela et al. 2007; López-Santiago et al. 2007; Feruglio et al. 2008; Novara et al. 2009). The size of these dataset (over  $10^5$  sources) prevents detailed multiwavelength studies of any statistically meaningful subsample of them. The only way to expand the knowledge of their properties to other regions of the electromagnetic spectrum is to cross-correlate these samples with surveys at other wavelengths. Cross-correlation is a powerful method in data analysis to compare the similarity and to quantitatively measure the relationship between two data groups. A large volume of papers describing several methods exists (e.g. Peebles 1974; Seldner & Peebles 1977; Furenlid & Furenlid 1990; Boyle et al. 1995), and many important applications have been developed since the first work by (Woodward 1995).

The cross-correlation of X-ray surveys with others at different wavelengths, and the analysis of their properties along the whole electromagnetic spectrum is important in several ways. First, it would provide clues on the nature of individual sources and their emission. Second, it would allow to acquire a deeper and more accurate insight into the statistical properties of different X-ray source populations, particularly for rare objects. It would also provide the basis for statistical modeling of such populations, which might give insight into the origin and evolution of systems emitting at high energies (e.g., Fabbiano 2006). Finally, it might reveal the existence of new classes of objects. Unidentified sources are particularly interesting for this last point.

The XMM-Newton Serendipitous Source Catalogue (2XMMi; Watson et al. 2009) is the largest survey of X-ray sources available at present, providing nearly homogeneous data for almost  $2.5 \times 10^5$  sources at arc-second angular resolution. Most of these sources have been identified with others at longer wavelengths, while many others remain unidentified. Watson et al. (2009) provide cross-identification of the 2XMMi sources with many other catalogs, including NVSS, 2MASS, USNO, etc. However, they do not investigate the statistical properties of the correlated samples. A recent study by Flesch (2010) provides a thorough investigation on the correlation of 2XMMi sources (and also of those from other XMM and Chandra catalogues) with different classes of optical objects. They also correlate the

optical sources with radio catalogs, although they avoid a direct cross-identification of X-ray with radio sources.

In this paper, we present a cross-identification of the 2XMMi sources with different radio catalogues covering the whole sky, the NRAO-VLA Sky Survey (NVSS; Condon et al. 1998), the Sydney University Molonglo Sky Survey (SUMSS; Mauch et al. 2007) and the Molonglo Galactic Plane Survey 2 (MGPS-2; Green et al. 1999). These catalogues were chosen because of their complementary sky coverage and their homogeneity (both internal and between catalogues). These properties allow us to perform a statistically significant analysis of X-ray source populations and their properties at radio wavelengths. We also perform a cross-correlation with the 2MASS Catalogue (Cutri et al. 2003). Using restrictive selection criteria, we assess the reliability of these cross-correlations and we use characteristics of well-known X-ray populations to make preliminary diagnosis of the nature of unidentified X-ray sources with radio and infrared counterparts. The structure of the paper is as follows: in Sect. 2 we describe the cross-correlation analysis and strategy to compute the positional correlation of sources. The main results and discussion are presented in Sect. 3. Finally, we summarize the main conclusions in Sect. 4.

## 2 Cross-correlation analysis

### 2.1 The catalogues

To perform a positional cross-identification between radio and X-ray sources we have used the NRAO VLA Sky Survey (NVSS<sup>1</sup>) catalog (Condon et al. 1998), the Sydney University Molonglo Sky Survey (SUMSS<sup>2</sup>; Mauch et al. 2007), and the Molonglo Galactic Plane Survey (MGPS2<sup>3</sup>; Green et al. 1999) with the XMM-Newton Serendipitous Source Catalog (Second Version: 2XMM<sup>4</sup>, 2007). The three radio surveys cover the whole sky.

The NVSS catalog (at 1420 MHz) contains 1773484 sources. It covers the entire sky north of  $-40^\circ$  declination. The rms positional uncertainties in RA and DEC vary from  $1''$  for relatively strong ( $S \geq 15$  mJy) point sources, to  $7''$  for the faintest ( $S \leq 2.3$  mJy) detectable sources. The SUMSS catalog (at 843 MHz) consists of 210412 radio sources. It covers the southern

<sup>1</sup><http://www.cv.nrao.edu/nvss/>

<sup>2</sup><http://www.astrop.physics.usyd.edu.au/sumsscat/>

<sup>3</sup><http://www.astrop.physics.usyd.edu.au/MGPS/ORIGINALS/>

<sup>4</sup>[http://heasarc.gsfc.nasa.gov/FTP/xmm/data/catalogs/2XMMcat\\_v1.0.fits.gz](http://heasarc.gsfc.nasa.gov/FTP/xmm/data/catalogs/2XMMcat_v1.0.fits.gz)



sky with  $\delta \leq -30^\circ$ . Positions in the catalog are accurate within  $1''$  to  $2''$  for sources with peak brightness  $\geq 20$  mJy/beam and are always better than  $10''$ . The MGPS2 is a radio continuum survey carried out with the Molonglo Observatory Synthesis Telescope (MOST) at 843 MHz with a resolution of  $45'' \times 45'' \cos \delta$ . This catalog has 48850 sources above a limiting peak brightness of  $10$  mJy beam $^{-1}$ . The region surveyed is  $245^\circ \leq l \leq 365^\circ$  and  $|b| \leq 10^\circ$ . Actually, it is the Galactic counterpart of the SUMSS catalog.

At X-ray wavelengths, the 2XMM catalog contains 246897 X-ray source detections above processing likelihood threshold of 6. The median flux (in the total photon energy band 0.2–12 keV) of the catalog detections is  $\sim 2.5 \times 10^{-14}$  erg cm $^{-2}$  s $^{-1}$ ; in the soft energy band (0.2–2 keV) the median flux is  $\sim 5.8 \times 10^{-15}$  erg cm $^{-2}$  s $^{-1}$  and in the hard band (2–12 keV) it is  $\sim 1.4 \times 10^{-14}$  erg cm $^{-2}$  s $^{-1}$ . About 20% of the sources have fluxes below  $10^{-14}$  erg cm $^{-2}$  s $^{-1}$ . The positional accuracy of the detections in the catalog is generally  $< 5$  arcseconds (99% confidence radius). To date, 1.93% of the whole sky has been observed with the *XMM-Newton* satellite.

Since we are interested in finding a positional correlation between radio and XMM-*Newton* sources, we adopted the following procedure for the determination of positional coincidences:

- First, we cross-identified radio and X-ray sources using the method described in the next subsection.
- The position of those radio/XMM coincident sources were subsequently cross-correlated with the 2MASS<sup>5</sup> catalog (Cutri et al. 2003), using for each pair of infrared/X-ray sources the same criteria used above.
- Then, we inspected the SIMBAD database and the NASA/IPAC Extragalactic Database (NED) to identify those previously known sources of the sample, which were separated in different tables.
- We finally studied the X-ray properties of unidentified X-ray sources with radio and infrared counterparts and compare them with those of well-known objects with the aim of making a preliminary diagnosis their possible nature.

## 2.2 Coincidence sample and statistical analysis

The cross-correlation of two catalogs to search for positional coincidences of sources is usually done using, as the selection criterion, the angular distance between sources (one in each catalog) appropriately weighted by its uncertainty. However, as the significance of such an approach also depends on the density of sources in the respective catalogs, the construction of the sample of

coincident sources must be carried out with some care. In this section we describe our approach to this task, which was applied to cross-correlate the 2XMM catalog with each one of the radio catalogs (NVSS, SUMSS, MGPS2) independently.

We constructed our sample of X–radio source coincidences in three steps. First, we computed for each pair of sources (one in the 2XMM catalog and the other in the corresponding radio catalog) the  $R$  statistic defined as

$$R = \left[ \frac{(\alpha_X - \alpha_R)^2}{\sigma_{\alpha,X}^2 + \sigma_{\alpha,R}^2} + \frac{(\delta_X - \delta_R)^2}{\sigma_{\delta,X}^2 + \sigma_{\delta,R}^2} \right]^{1/2}, \quad (1)$$

where  $(\alpha_{X/R}, \delta_{X/R})$  are the equatorial coordinates of the X-ray/radio source, and  $(\sigma_{\alpha,X/R}, \sigma_{\delta,X/R})$  their corresponding standard deviations. Clearly,  $R$  increases with the increase of the source differential position, in such a way that the uncertainties in the coordinates of each source are fully taken into account. Low  $R$  values point to a possible coincidence, while high  $R$  values suggest no relationship between the sources. Under the assumption that the positions of both sources do coincide,  $R$  has a Rayleigh distribution (e.g. Allington-Smith et al. 1982), i.e. the probability that  $R$  is greater than any given non-negative value  $R_0$  is

$$P(R > R_0) = \exp(-R^2/2). \quad (2)$$

For  $R_0 = 3.03$ ,  $P(R > R_0)$  is only of 1%, hence we constructed a first sample of coincident sources by retaining all pairs of sources for which  $R \leq 3.03$ . For such purpose, we used our IDL (Interactive Data Language<sup>6</sup>)-based code to cross-correlate the aforementioned catalogs. Given the construction of this sample, the probability that a *true* coincidence is missed is only 1% (the completeness is 99%). However, we expect this sample to be contaminated by some amount of chance coincidences of unrelated X and radio sources. We call it our *dirty* sample.

As a second step, we estimated the fraction of spurious (chance) coincidences in our sample. For this purpose, we evaluated the probability  $P_u(R \leq R_0)$  of getting an unrelated 2XMM–radio source pair with  $R \leq R_0$ , assuming a uniform distribution of radio sources in the vicinity of each 2XMM source. This probability is

<sup>6</sup>[http://physics.nyu.edu/grierlab/idl\\_html\\_help/home.html](http://physics.nyu.edu/grierlab/idl_html_help/home.html)

<sup>5</sup><http://irsa.ipac.caltech.edu/cgi-bin/Gator/>



**Table 1** Statistical analysis.

| Catalogue | $\sigma_{\alpha,R}$<br>'' | $\sigma_{\delta,R}$<br>'' | $\langle n \rangle$<br>deg <sup>-2</sup> | $\sigma_n$<br>deg <sup>-2</sup> | $P_u(R \leq 3.03)$<br>$\times 10^{-4}$ | $N$    | $\langle N_{99} \rangle$ | $\sigma_{99}$ | $N_{99}$ | $f_{99}$ | $f_{95}$ | $f_{68}$ |
|-----------|---------------------------|---------------------------|--|---------------------------------|--|--------|--------------------------|---------------|----------|----------|----------|----------|
| MGPS2     | 2.9                       | 3.1                       | 19                                       | 6                               | 5.5                                    | 24148  | 13                       | 4             | 109      | 0.12     | 0.09     | 0.06     |
| SUMSS A   | 2.7                       | 2.9                       | 30                                       | 5                               | 8.0                                    | 17436  | 14                       | 4             | 232      | 0.06     | 0.05     | 0.02     |
| SUMSS B   | 2.7                       | 2.9                       | 20                                       | 5                               | 5.3                                    | 17681  | 9                        | 3             | 217      | 0.04     | 0.03     | 0.02     |
| NVSS      | 4.0                       | 4.3                       | 52                                       | 10                              | 24.5                                   | 150032 | 368                      | 19            | 2762     | 0.13     | 0.10     | 0.07     |

$$P_u(R \leq R_0) = \int_0^\infty \int_0^\infty P_u(R \leq R_0 | \sigma_\alpha, \sigma_\delta) \cdot f(\sigma_\alpha, \sigma_\delta) d\sigma_\alpha d\sigma_\delta, \quad (3)$$

where  $\sigma_\alpha = (\sigma_{\alpha,X}^2 + \sigma_{\alpha,R}^2)^{1/2}$ ,  $\sigma_\delta = (\sigma_{\delta,X}^2 + \sigma_{\delta,R}^2)^{1/2}$ ,  $P_u(R \leq R_0 | \sigma_\alpha, \sigma_\delta)$  is the conditional probability that an unrelated pair has  $R < R_0$ , given the values of  $\sigma_\alpha$  and  $\sigma_\delta$ , and  $f(\sigma_\alpha, \sigma_\delta)$  the joint probability density function of these two variables. It can be seen, from the definition of  $R$ , that  $P_u(R \leq R_0 | \sigma_\alpha, \sigma_\delta)$  is the probability of finding at least one radio source inside an ellipse of semiaxes  $\sigma_\alpha$  and  $\sigma_\delta$  centered at the position of the 2XMM source. If the local density of radio sources is  $n$ , this is simply

$$P_u(R \leq R_0 | \sigma_\alpha, \sigma_\delta) = 1 - e^{-\pi n R_0^2 \sigma_\alpha \sigma_\delta}. \quad (4)$$

To simplify expression 3, we computed mean position uncertainties of the radio sources directly from the data in the catalogs, obtaining values  $< 5''$  (see Table 1). Mean position uncertainties in the 2XMM catalog were also computed, obtaining a value of  $2.0''$ . We also determined the radio source density  $n$  at the position of each 2XMM source located within the radio catalog boundaries, by counting the number of sources inside  $1^\circ$ -radius circles centered in the X sources, and dividing it by the area of the circles. For this purpose, we divided the SUMSS catalog into two parts, one comprising sources with  $\delta_{J2000} \leq -50^\circ$  (SUMSS A), and the other comprising sources with  $\delta_{J2000} > -50^\circ$  (SUMSS B) because of the different sensitivities of this catalog in the two regions, which results in different source densities. The mean density  $\langle n \rangle$  for each radio catalog is given in Table 1, together with the dispersion  $\sigma_n$ . Given that  $\sigma_n$  is small compared to  $\langle n \rangle$ , for the purpose of computing the probability of chance coincidences we assumed that the local source density  $n$  in each radio catalog is constant and equal to  $\langle n \rangle$ .

From the source densities and mean positional uncertainties, it is easy to verify that in every case  $\pi \langle n \rangle R_0^2 \sigma_\alpha \sigma_\delta \ll 1$  hence, to first order,  $P_u(R \leq R_0 | \sigma_\alpha, \sigma_\delta) = \pi \langle n \rangle R_0^2 \sigma_\alpha \sigma_\delta$ . Assuming that total uncer-

tainties in each coordinate are independent, the probability of a chance coincidence is

$$P_u(R \leq R_0) = \pi \langle n \rangle R_0^2 \langle \sigma_\alpha \rangle \langle \sigma_\delta \rangle. \quad (5)$$

Finally, by counting the number  $N$  of 2XMM sources within the boundaries of each radio catalog, we were able to compute the mean  $\langle N_{99} \rangle$  and variance  $\sigma_{99}^2$  of the number of coincidences expected by chance between each pair of catalogs, at 99% completeness,

$$\langle N_{99} \rangle = N P_u(R \leq 3.03), \quad (6)$$

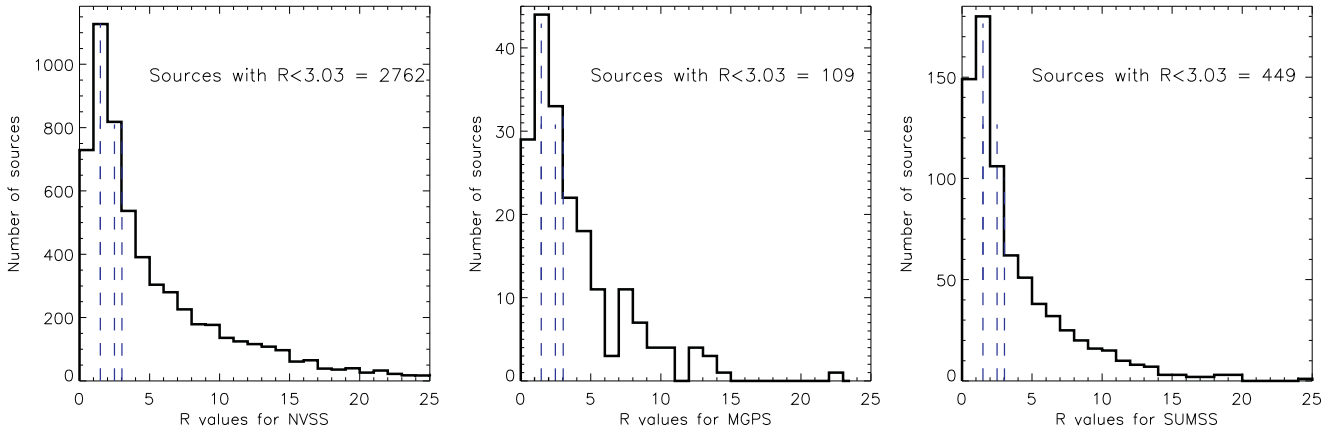
and

$$\sigma_{99}^2 = N P_u(R \leq 3.03) (1 - P_u(R \leq 3.03)), \quad (7)$$

respectively. These values, together with the actual number of coincidences  $N_{99}$  obtained in the cross-correlations, are given in Table 1. As it can be seen, the observed  $N_{99}$  values are greater than their expected means by at least  $24\sigma_{99}$ , which implies that the observed coincidences cannot be explained as due only to chance superposition of unrelated X and radio sources. This strongly suggests that many 2XMM sources do emit at radio wavelengths.

The contamination fraction of our sample can be estimated as  $f_{99} = \langle N_{99} \rangle / N_{99}$ , and is also listed in Table 1. The contamination is low, reaching only 13% in the worst case. Nevertheless, it could be interesting to have a sample with a very low contamination, at the expense of a smaller completeness. Starting with the value of the desired completeness, any such sample could be constructed using the data of our dirty sample and the formulae given above. As the last step of our coincidence analysis, and with the purpose of obtaining cleaner samples for the subsequent analysis of the 2XMM sources, we constructed an *intermediate* and a *clean* sample, defined by their completeness levels of 95% ( $R_0 = 2.45$ ) and 68% ( $R_0 = 1.51$ ) respectively. The contamination fractions obtained ( $f_{95}$  and  $f_{68}$  respectively) are shown in Table 1.





**Fig. 1** Distribution of  $R$  values for X-ray sources and their nearest neighbours. Dotted lines at  $R = 3.03$ ,  $2.45$  and  $1.51$  define the criteria for the construction of our dirty, intermediate and clean samples of coincidences. See text.

### 3 Main results and discussion

#### 3.1 Coincidences between radio/infrared and X-ray sources

Fig.1 shows the distribution of  $R$  for all the X-ray sources and their nearest radio neighbours in each of the three catalogs. The distribution shows a maximum at  $R \sim 1.5$ . After applying the first criterion ( $R_0 = 3.03$ ), a total of 2762, 449, and 109 observed coincidences were found for the NVSS, SUMSS and MGPS2 catalogs, respectively. Among these, only 368, 23 and 13 respectively are expected to be due to chance alignment of unrelated sources. Figure 2 shows the all sky distribution of the positionally correlated radio/X-ray sources.

We cross-identified the radio-X-ray sample in our ‘dirty’ sample with the 2MASS catalog using the same value of  $R \leq 3.03$ . Out of 2762 NVSS sources, 1253 lie at high galactic latitudes ( $|b| \geq 10^\circ$ ) and, of them, 432 display 2MASS counterparts. At low galactic latitudes ( $|b| \leq 10^\circ$ ) we found 1509 sources, of which only 468 present 2MASS counterparts. A preliminary study of the latter sources was carried out by Combi et al. (2008). Of the 449 SUMSS/2XMM coincidences sources, 348 are at low galactic latitude ( $|b| \leq 10^\circ$ ), of which 17 display 2MASS counterparts. At high galactic latitude, there are 65 coincidences, among which 27 present 2MASS counterpart. Finally, out of 109 MGPS2/2XMM coincidences (all with  $|b| \leq 10^\circ$ ) only 53 display 2MASS counterparts.

As a further step, we inspected the SIMBAD and the NASA/IPAC Extragalactic Database (NED) to classify unidentified and well-known sources. In a series of tables, described in a latter subsection, we present geometric and physical characteristics of different identified objects. Of the total coincident radio/X-ray sources,

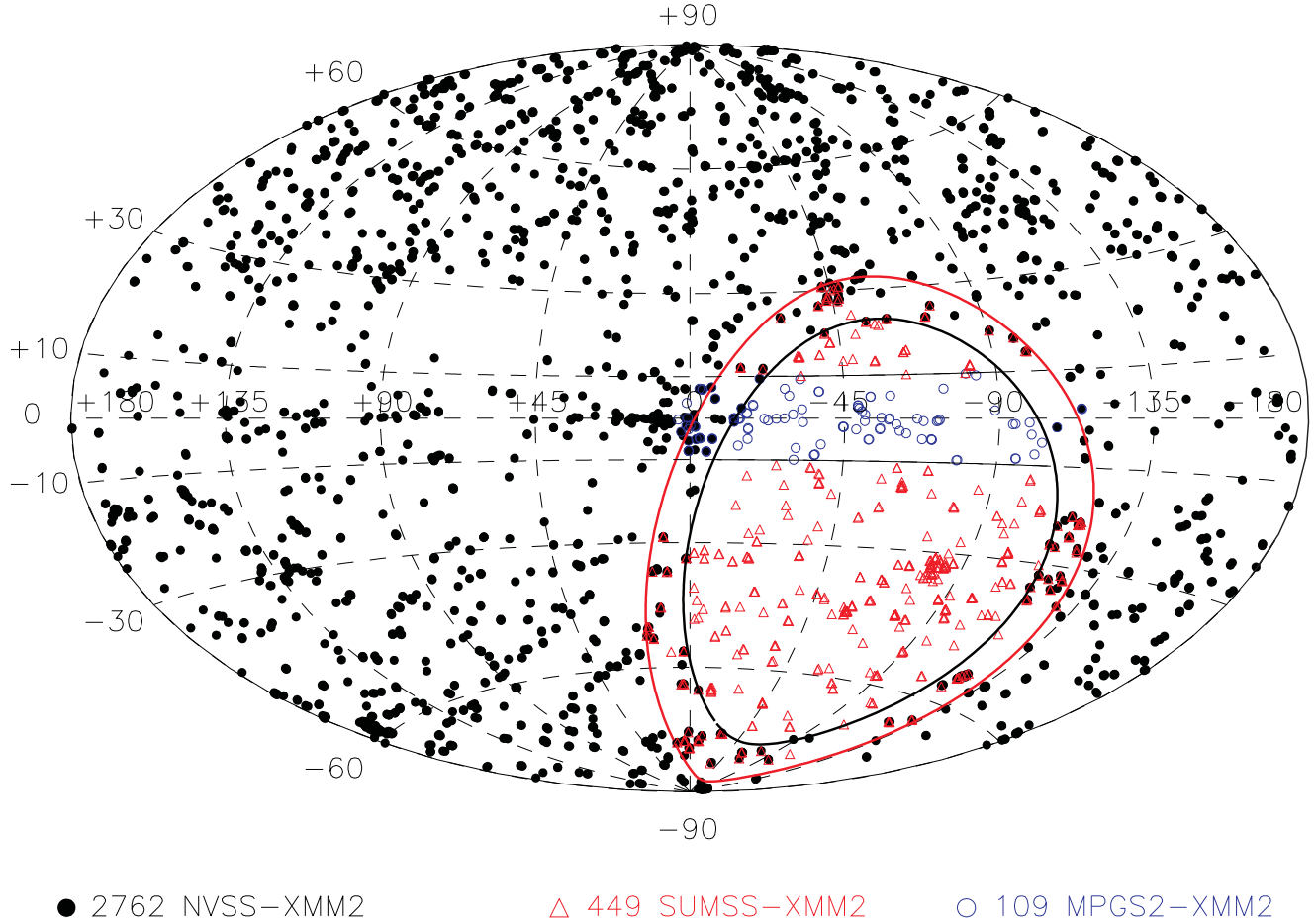
2225 are unidentified (67%). These sources are published online only. Out of them, 416 were detected in radio catalogs different from the NVSS/SUMSS and MGPS2. We find a very wide taxonomy of sources among the latter: 320 normal galaxies, 78 Seyferts I, 91 Seyferts II, 23 Liners, 46 radiogalaxies, 12 double galaxies, 176 clusters of galaxies, 196 QSOs, 58 different types of stars, 15 pulsars, 4 HII regions, 19 supernovae or supernova remnants, 5 low or high mass binaries, 2 young stellar objects, 7 young or old open clusters, 4 maser sources, 5 possible connections with gamma-ray sources, 29 star forming regions, 4 planetary nebulae, and one source likely related to the Galactic Center.

#### 3.2 X-ray properties of well-known populations

Statistical studies of X-ray sources based on X-ray colors can be used to classify objects with different spectral energy distributions belonging to a class of galactic or extragalactic population. Owing to the wide energy range of the XMM-Newton telescope (0.2–12 keV), we were able to compute X-ray colors of sources in three different broad-bands, thus helping us to better unmask signs of high energy processes in our list of coincident sources.

The most efficient representation of the hardness-ratio plane in terms of thermal and/or non-thermal models suggests us a restricted energy range. We used three energy bands defined in the catalog as: Soft ( $S$ : 0.5–1.0 keV), Medium ( $M$ : 1.0–2.0 keV), and Hard ( $H$ : 2–4.5 keV). The X-ray hardness-ratio was defined as:  $H_x = (M - S)/(S + M)$  and  $H_y = (H - M)/(H + M)$ . Since it is difficult to classify individual sources with confidence on the basis of X-ray colors alone, we computed and plotted the predicted loci for thermal (in orange) and non-thermal (black) models with absorption. For the thermal model we used the APEC (Smith et al.





**Fig. 2** Spatial distribution of the positionally correlated radio/X-ray sources. NVSS sources with galactic latitudes  $|b| \geq 10^\circ$  and  $|b| \leq 10^\circ$  are shown as black dots. SUMSS sources are shown in open blue circles and MGPS-2 sources are shown as red triangles. The black solid line represents the declination limit  $-40^\circ$

2001) with values of temperature ranging from 0.2 to 2.6 keV and interstellar absorptions  $N_H$  from  $0.1 \times 10^{21}$  to  $10 \times 10^{22} \text{ cm}^{-2}$ . On the other hand, for the absorbed power-law (PL) model, we used values of  $\Gamma$  index ranging from 0 to 4 and interstellar absorptions  $N_H$  from  $1 \times 10^{21}$  to  $4 \times 10^{22} \text{ cm}^{-2}$ . The grid was calculated with the Portable Interactive Multi-Mission Simulator (PIMMS6). To determine the X-ray properties of each source, we performed a two-dimensional interpolation with the grids of both models using the information provided by the hardness-ratios. First,  $H_y$  was used to determine the temperature in the thermal model and  $\Gamma$  in the power-law one. Then, a value of  $N_H$  was determined for each model from  $H_x$ . Our final results are given in the tables in the appendix (see Appendix).

The uncertainties in the estimate of the source parameters depend on the obtained values for them. For instance,  $N_H$  remains undetermined using both models for values above  $4 \times 10^{22} \text{ cm}^{-2}$ , i.e. for high  $H_x$  values ( $H_x \sim 1$ ). Also, in the thermal model, the temperature above 2 keV is less constrained since the separation in

the grid between models is very short. The X-ray characteristics for different objects are presented and briefly discussed below.

### 3.2.1 Galactic sources

The resulting hardness ratio (HR) diagrams for galactic objects are shown in Figure 3 (only the results for stars are shown here; figures for the remaining objects are available on-line). Filled (blue) points, open (green) squares and open (red) diamonds indicate the positional coincident XMM-Newton sources with NVSS, SUMSS and MGPS2 radio sources, respectively. Number of sources follows those that are presented in their respective electronic tables. Table 2 displays different types of galactic sources, which are fitted by a thermal model, a power-law model, a combination of both models or none model.



**Table 2** Number of sources of known class of our sample that could be fitted to each model.

| Tipo                     | $N_{\text{tot}}$ | Fit  |    |         |      |
|--------------------------|------------------|------|----|---------|------|
|                          |                  | Both | PL | Thermal | None |
| Stars                    | 58               | 28   | 7  | 5       | 16   |
| Pulsars                  | 15               | 3    | 3  | 4       | 5    |
| SNe and SNR <sup>a</sup> | 19               | 4    | 0  | 1       | 4    |
| X-ray binaries           | 5                | 4    | 0  | 1       | 0    |
| SFR <sup>b</sup>         | 29               | 15   | 6  | 5       | 3    |
| HII regions              | 4                | 0    | 2  | 1       | 1    |
| YSO <sup>c</sup>         | 2                | 2    | 0  | 0       | 0    |
| Masers                   | 2                | 1    | 0  | 0       | 1    |
| PNe <sup>d</sup>         | 4                | 0    | 1  | 1       | 2    |
| Stellar clusters         | 7                | 5    | 1  | 1       | 0    |
| $\Gamma$ -Ray sources    | 5                | 4    | 0  | 1       | 0    |
| Galactic center          | 1                | 0    | 0  | 0       | 0    |

<sup>a</sup>Supernovae and Supernova Remnants

<sup>b</sup>Star-Forming Regions

<sup>c</sup>Young Stellar Objects

<sup>d</sup>Planetary Nebulae

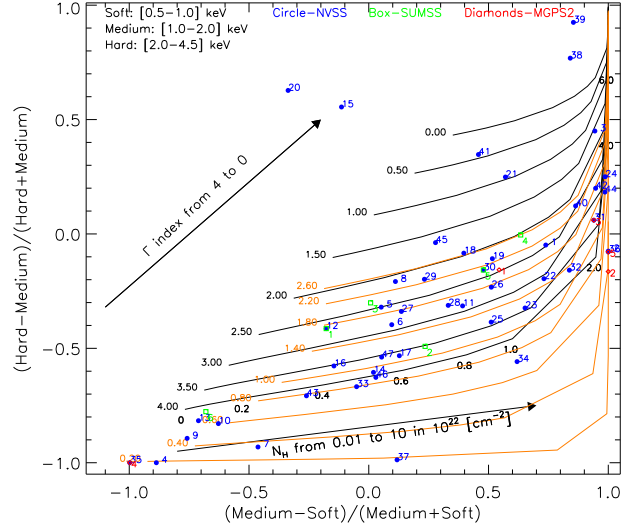
### 3.2.2 Extragalactic objects

In the appendix, we show the HR diagrams for Quasi-Stellar Objects (QSOs) at different redshifts ( $z=0.1, 0.25, 0.5, 1.0, 1.5$  and  $2$ ). Figures for the remaining extragalactic objects are available on-line.

**Normal galaxies:** In Figure 8 we show the distribution of normal galaxies in the HR diagram. Most of these objects lie at  $z \approx 0.1$ . At this redshift there are twenty six sources that do not fit the models, 56 are fitted by both models, 22 only by a PL and 24 only by a thermal model. Most of the sources lie between values of the  $\Gamma$  index from 1.75 to 4, temperatures in the range 0.8 to 2.6 kT and interstellar absorption  $N_H$  with values ranging from  $0.1$  to  $0.8 \times 10^{22} \text{ cm}^{-2}$ . For values of  $z$  between 0.25 to 0.50 the behaviour is similar to the previous case. At values of  $z > 1$  only a PL model fit the objects. There are not objects for values of  $z > 1.25$ .

**Seyfert I:** Figure 9 shows the distribution of Seyfert I galaxies in the HR diagram. As can be seen, a large fraction of these sources have  $z \approx 0.1$ , with values of  $\Gamma$  indices from 2.0 to 3.75, temperatures ranging from 1.2 to 2.6 kT and a mean interstellar absorption  $N_H$  of  $0.3 \times 10^{22} \text{ cm}^{-2}$ . It is interesting to note that when  $z$  increases ( $z=0.5, z=1.0$  and  $z=1.5$ ) the  $N_H$  increases gradually to 0.8, 1.5 and  $3 \times 10^{22} \text{ cm}^{-2}$ . In addition, when  $z$  increases thermal models compressed towards high values of  $\Gamma$ . At values of  $z > 0.75$  a PL model is most suitable to fit the sources.

**Seyfert II:** Figure 10 shows the distribution of Seyfert II galaxies in the HR diagram. As in the previous case, most of the sources have  $z \approx 0.1$  with values



**Fig. 3** Ratios of source counts in different spectral bands for stars in the NVSS (circle), SUMS (square) and MGPS2 (diamonds). Plots for the remaining galactic objects are available on-line. A color version of this plot is also available on-line.

of  $\Gamma$  indices from 1.5 to 4.0, temperatures ranging from 0.9 to 2.6 kT and a mean interstellar absorption  $N_H$  of  $0.2 \times 10^{22} \text{ cm}^{-2}$ . As can be seen, Seyfert II galaxies display values of interstellar absorption  $N_H$  lower than Seyfert I, and most of the sources are best fitted by a PL model.

**Liniers:** Figure 11 shows the distribution of Linier galaxies in the HR diagram. Around 90% of the sources have  $z \approx 0.1$  and lie concentrated between values of  $\Gamma$  indices of 2.25 to 3.25, temperatures ranging from 1.4 to 2.2 kT and a mean interstellar absorption  $N_H$  of  $0.3 \times 10^{22} \text{ cm}^{-2}$ .

**Radiogalaxies:** Figure 12 shows the distribution of radiogalaxies in the HR diagram. Around 50% of the sources lie at  $z \approx 0.1$ , which display values of  $\Gamma$  indices from 2.25 to 4.0, temperatures ranging from 0.8 to 2.6 kT and a mean interstellar absorption  $N_H$  of  $0.4 \times 10^{22} \text{ cm}^{-2}$ . At values of  $z > 0.5$  a PL model seem to be most suitable to fit the sources.

**Double galaxies:** Figure 13 shows the distribution of double galaxies in the HR diagram. All the sources lie at  $z \approx 0.1$ . Unfortunately in this case the statistic is very low, therefore, it is impossible to suggest a possible trend for these sources.

**Clusters of galaxies:** Figure 14 illustrates the distribution of clusters of galaxies in the HR diagram. In this case, 89% of the objects lie at  $z \approx 0.1$  and display values of  $\Gamma$  indices between 2.0 and 4.0, temperatures ranging from 0.4 to 2.6 kT and a mean interstellar absorption  $N_H$  of  $0.2 \times 10^{22} \text{ cm}^{-2}$ . Although most of the



sources are fitted by a combination of thermal and non-thermal models, an important fraction of these (30%) is only fitted by a thermal model. At values of  $z$  larger than 1.0 a PL model is most suitable to fit the sources.

**Quasars:** Figure 4 shows the distribution of Quasars (QSOs) in the HR diagram. Out of 196 objects, 65% lie at  $z > 0.75$ . Objects with values of  $z$  between 0.1 and 0.75 are best fitted by a combination of both thermal and PL models. On the contrary, for values of  $z > 0.8$  only a PL model fit properly the X-ray emission of the sources. In this last case, the objects show values of  $\Gamma$  indices between 1.5 and 3.0, and a mean interstellar absorption  $N_H = 0.3 \times 10^{22} \text{ cm}^{-2}$ .

It is interesting to note that for values of interstellar absorption  $N_H > 10^{22} \text{ cm}^{-2}$  the fraction of AGNs is quite low. A result consistent with the X-ray study recently carried out by Watson et al. (2009).

### 3.3 Unidentified sources

Figures 5, 6 and 7 show the distribution of unidentified radio/X-ray sources in the HR diagram, for galactic latitudes  $|b| \geq 10^\circ$ ,  $|b| < 10^\circ$ ,  $|b| \leq 5^\circ$  and  $|b| \leq 2^\circ$ , respectively. Grids with the predicted loci for thermal and non-thermal models were computed for  $z=0$ . Of the total unidentified sources, 392 lie out of the grids, 1048 are fitted by both models, 330 only by a power-law model and 354 only by a thermal model.

Out of 2225 objects, 1018 have galactic latitudes  $|b| \geq 10^\circ$ , 1207  $|b| \leq 10^\circ$ , 1166  $|b| \leq 5^\circ$  and 1124  $|b| \leq 2^\circ$ . For galactic latitudes  $|b| \leq 10^\circ$ , the contamination of extragalactic objects is  $< 6\%$ . In other words, 94% of sources with  $|b| \leq 10^\circ$  lie mainly on the galactic plane and are probably galactic objects.

Figure 5 (left panel) shows unidentified sources with galactic latitudes  $|b| \geq 10^\circ$ . As can be seen, a large concentration of sources lie between values of  $\Gamma$  indices from 1.5 to 4.0 (with a mean of  $\approx 2.75$ ), values of temperature between 0.6 and 2.6 kT (with a mean kT of 1.6) and interstellar absorption  $N_H$  with values in the range from  $0.2$  to  $0.8 \times 10^{22} \text{ cm}^{-2}$  (with a mean of  $N_H \approx 0.5 \times 10^{22} \text{ cm}^{-2}$ ). X-ray spectral characteristics of well-known extragalactic objects (see Figures 3 and 8–14) suggest that unidentified sources with galactic latitudes  $|b| \geq 10^\circ$  have mainly an extragalactic origin and could be different types of AGNs, in agreement with recent X-ray studies of sources with high galactic latitudes. These results support the widely accepted findings that the X-ray sky at middle and high galactic latitudes is largely dominated by AGNs (see Barcons et al. 2007; Caccianiga et al. 2007; Watson et al. 2009).

Figure 6 (left panel) displays the distribution of unidentified sources with galactic latitudes  $|b| \leq 10^\circ$

in the HR diagram. As can be seen, in contrast with the sources at high galactic latitudes, the distribution presents a more complex structure. There is still a small concentration of sources at low values of interstellar absorption, but with an important fraction of sources with  $N_H$  greater than  $0.5 \times 10^{22} \text{ cm}^{-2}$ . These objects could be more absorbed sources belonging to the galactic plane and therefore with galactic origin. Comparing the positions of well-known galactic objects and unidentified sources in the HR diagrams, it is possible to provide constraints on the overall unidentified X-ray population and delineate some likely origin for these sources. For values of interstellar absorption  $N_H$  less than  $0.5 \times 10^{22} \text{ cm}^{-2}$ , unidentified sources could be different types of stars, SNRs or a small fraction of AGNs behind the galactic plane. On the other hand, for values of interstellar absorption  $N_H$  greater than  $0.5 \times 10^{22} \text{ cm}^{-2}$  these objects could be HII regions, low/high mass X-ray binaries, young stellar objects, sources of masers or star forming regions.

Finally, in order to distinguish more clearly the concentration of these objects in the HR diagrams, we constructed density maps for the sources at galactic latitudes  $|b| \geq 10^\circ$  and  $|b| \leq 10^\circ$ . Figures 5 (right panel) and 6 (right panel) show density maps for unidentified sources. The maps are 2D-histograms normalized to  $1/N$ , where  $N$  is the total number of sources in the diagram. For the size of the bin in axis  $x$  and  $y$ , we chose the median of the errors in HR1 and HR2, respectively. Contours were overplotted, each level corresponding to the percentage with respect to the total number of sources in the plot.

For unidentified sources with galactic latitudes  $|b| \geq 10^\circ$  (see Fig.13, right panel) the density map shows a feature of double-peak nature. Here, the contours were determined for the density map normalized to the maximum number of sources found in a bin in the histogram, to better distinguish the double-pick nature of the source sample in the density map. Comparing this figure with the HR diagrams of well-known extragalactic objects, we found that the highest peak at  $(H - M)/(H + M) = (0.1 - 0.3)$  is formed by the contribution of Seyfert I and QSOs, and the lowest one at  $(M - S)/(M + S) = (-0.1 - 0.4)$  by normal galaxies. On the other hand, for unidentified sources with galactic latitudes  $|b| \leq 10^\circ$  (see Fig.14, right panel), the density map shows a more complex structure, with a significant fraction of much more absorbed objects. These sources could be part of the dominant X-ray population of obscured (highly absorbed) and hard-spectrum sources, absent in earlier soft X-ray surveys. Possibly, the contribution of distant accreting low/high mass X-ray binaries, cataclysmic variables, RS CVn systems, and a



large population of coronally active stars (Hands et al. 2004).

#### 4 Summary

In this paper we have presented the first positional cross-correlation study between radio, infrared and X-ray sources detected by XMM-*Newton* telescope. Analysing radio and modern, more sensitive X-ray data, we found 3320 objects with positional coincidence between radio and X-ray catalogs. The significance of the observed coincidences was evaluated through Monte Carlo simulations of synthetic sources following a well-tested protocol. As a result we found that the percentage of chance coincidences is less than 1%.

Out of 3320 coincident sources, 1746 have galactic latitudes  $|b| < 10^\circ$  and 1576  $|b| \geq 10^\circ$ . Besides, 997 display infrared counterparts in the 2MASS catalog, 1095 are well-known objects and the remainder 2225 sources ( $\sim 67\%$ ) are unidentified. We found galactic and extragalactic objects among the list of well-known X-ray sources. Galactic objects such as stars, pulsars, HII regions, supernova and supernova remnants, low/high mass X-ray binaries, young stellar objects, young and old open clusters, masers, gamma-ray sources, star forming regions, planetary nebulae and a source possibly related to the galactic center. Among the extragalactic objects, we found normal galaxies, different types of AGNs (e.g., Seyfert I, Seyfert II, Liners, radiogalaxies and double galaxies), QSOs, and clusters of galaxies.

As a second step, we carried out a dedicated study based on X-ray colors of well-known galactic and extragalactic objects. These X-ray hardness ratios were used to provide a crude representation of the X-ray spectrum and to make preliminary diagnosis of the nature of unidentified X-ray sources. X-ray spectral characteristics of well-known populations of objects suggest that unidentified sources with galactic latitudes  $|b| \geq 10^\circ$  have mainly an extragalactic origin. In addition, for galactic latitudes  $|b| \leq 10^\circ$  we found that most of the unidentified sources lie at galactic latitudes  $|b| \leq 2^\circ$ . This latter result suggests that most of the unidentified sources found on the galactic plane might have a galactic origin. They could be different type of stars, SNRs, low/high mass X-ray binaries, young stellar objects, masers, star forming regions or part of some new population of X-ray sources.

The present catalog, we hope, will be a very useful tool for researchers interested in both population and individual source studies.

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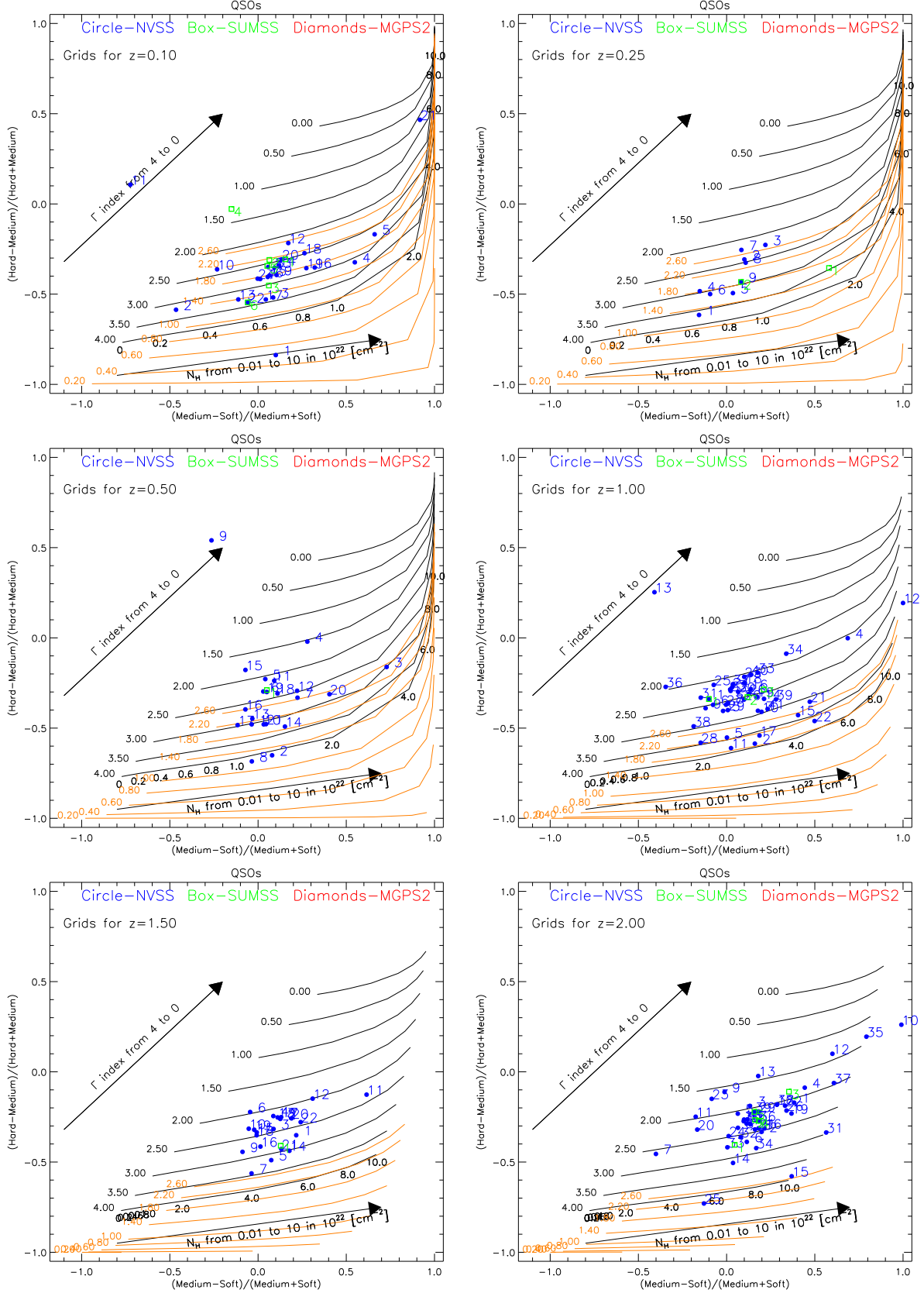
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## A Description of the tables

Tables 3 to 8 list positional coincidences between the NVSS, SUMSS and MGPS2 surveys with the 2XMM-*Newton* catalog, for different types of sources. Unidentified sources are published online only. In the tables, the sources are ordered according to right ascension; part of the information on a source is arranged in twenty one and twenty two columns for galactic and extragalactic sources, respectively. These tables are intended as a useful tool for researchers interested in particular identifications.

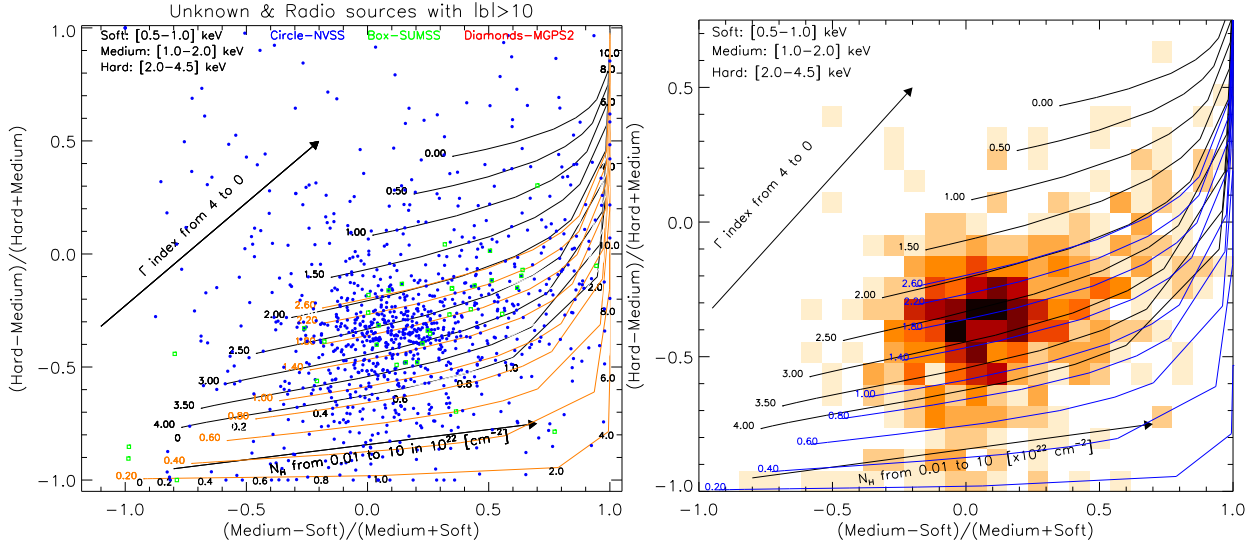
Columns 1 and 2 provide the source number and name with rough information on its sky location, according to the conventional XMM-*Newton* source nomenclature. Columns 3 and 4 give the right ascension (RA) and declination (DEC) of the source for equinox J2000.0. The RA and DEC are given as [hh mm ss] and [ $^{\circ}$  ' "], respectively. An indication of the accuracy of this position, in the form of equivalent (90 percent confidence level) error radii is indicated in Column 5. Columns 6 and 7 give the hardness ratio as defined in Sec.3.2. Columns 8 and 9 display the temperature ( $kT$ ) and interstellar absorptions  $N_H$  obtained from the thermal model. Columns 10 and 11 list  $\Gamma$  indexes and the interstellar absorptions  $N_H$  computed with the non-thermal model. The X-ray flux, in units of  $\text{ergs s}^{-1} \text{cm}^{-2}$ , is indicated in Column 12. It was computed in the SXSSC using an energy conversion factor (ECF) in the 0.2-12 keV energy band. Columns 13, 14 and 15 give the name of the radio counterpart in the NVSS, SUMSS or MGPS2 surveys, its radio flux (in mJy) and R statistic, respectively. Columns 16, 17, 18 and 19 list the possible infrared counterpart in the 2MASS catalog, its magnitude Ks, the  $(H - Ks)$  and  $(J - H)$  differences, and the value of  $R$  obtained from the XMM and 2MASS catalogs (Cutri et al. 2003, Skrutskie et al. 2006). Finally, Columns 20 and 21, provide the redshift (for extragalactic sources) and the main reference associated to each source. The references are the more recent study with the XMM-*Newton* satellite or another X-ray observatory. If the source has not been previously studied with any X-ray observatory, the reference indicates the detection at other wavelengths.



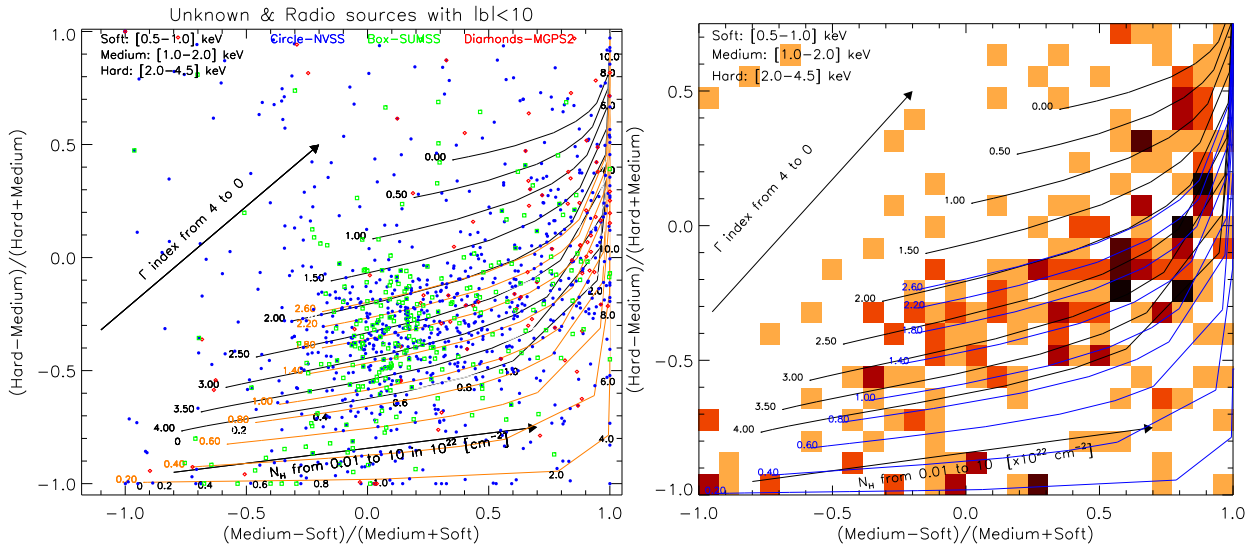


**Fig. 4** Ratios of source counts in different spectral bands for QSOs at different redshifts ( $z=0.1, 0.25, 0.5, 1.0, 1.5$ , and  $2$ ) in the NVSS (circle), SUMS (square) and MGPS2 (diamonds). Plots for the remaining extragalactic objects are available on-line. A color version of this plot is also available on-line.



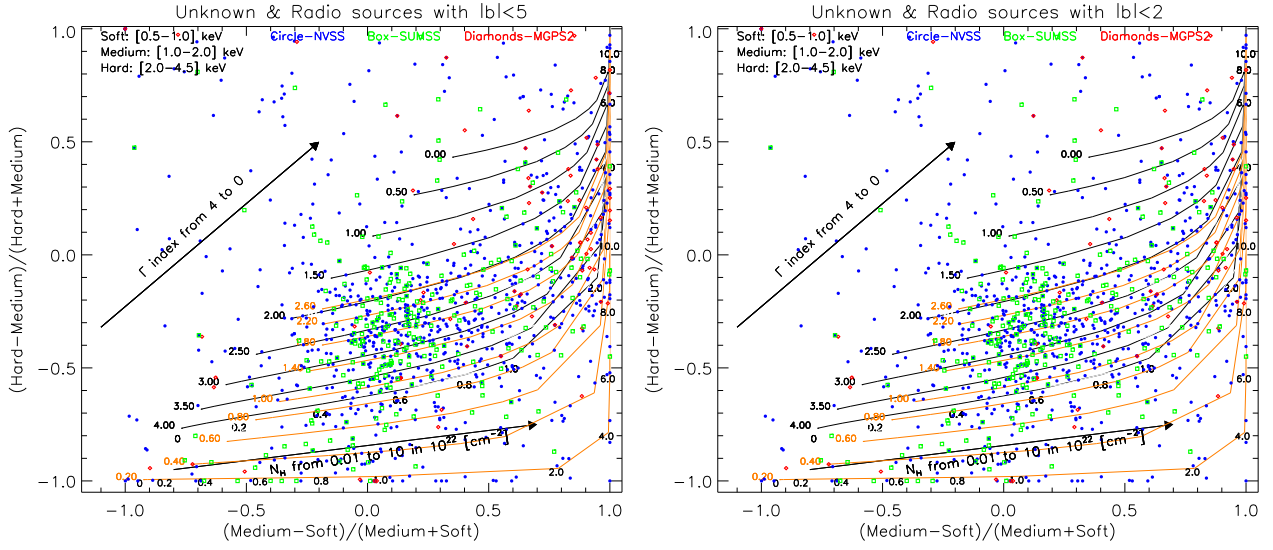


**Fig. 5 Left:** Ratios of source counts in different spectral bands for unidentified coincident radio/X-ray sources with galactic latitude  $|b| > 10^\circ$ . Points represent the same as in the previous figures. **Right:** Density map in the hardness-ratio diagram for unidentified sources with galactic latitude  $|b| > 10^\circ$ . Contours were overplotted, each level corresponding to the percentage with respect to the total number of sources in the plot. Bin size corresponds to a maximum of 39 sources per bin.



**Fig. 6 Left:** Ratios of source counts in different spectral bands for unidentified coincident radio/X-ray sources with galactic latitude  $|b| < 10^\circ$ . Points represent the same as in the previous figures. **Right:** Density map in the hardness-ratio diagram for unidentified sources with galactic latitude  $|b| < 10^\circ$ . Contours were overplotted, each level corresponding to the percentage with respect to the total number of sources in the plot. Bin size corresponds to a maximum of 39 sources per bin.





**Fig. 7** **Left:** Ratios of source counts in different spectral bands for unidentified radio/X-ray sources with galactic latitude  $|b| < 5^\circ$ . **Right:** Ratios of source counts in different spectral bands for unidentified radio/X-ray sources with galactic latitude  $|b| < 2^\circ$ . Points represent the same as in the previous figures.



Table 3 NVSS/XMM: Galactic objects

| Src.<br># | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio<br>$\frac{M-S}{S+M}$<br>$\frac{H+M}{H+M}$ |            | Thermal – Non thermal<br>$N_H$ KT $N_H$ $\Gamma$ |      |     |      | $F_x$<br>[cgs] | Name<br>NVSS J+ | $F_r$<br>[mJy] | $R_{xr}$<br>$f_{<99\%}$ | Name<br>2MASS J+ | 2MASS Mag & Colors<br>$K$ $H-K$ $J-H$ |       |       | $R_{xi}$<br>$f_{<99\%}$ | Bib<br>Ref. |
|-----------|-----------------|-------------|--------------|----------|--|------------|--|------|-----|------|----------------|-----------------|----------------|-------------------------|------------------|---------------------------------------|-------|-------|-------------------------|-------------|
| Stars     |                 |             |              |          |  |            |  |      |     |      |                |                 |                |                         |                  |                                       |       |       |                         |             |
| 1         | 000537.0+634027 | 00:05:37.00 | +63:40:27.79 | 0.45     | 0.74±0.06  | -0.05±0.05 | 0.8  | 2.0  | 1.  | 2.5  | 1.25± 0.10     | 000537+634030   | 41.4 ± 1.3     | 2.81                    | ---              | ---                                   | ---   | ---   | 302                     |             |
| 2         | 000647.0+633602 | 00:06:47.04 | +63:36: 2.37 | 1.49     | 1.00±0.40  | -0.08±0.26 | ---  | ---  | --- | ---  | 0.08± 0.04     | 000647+633558   | 4.5 ± 0.5      | 1.06                    | ---              | ---                                   | ---   | ---   | 302                     |             |
| 3         | 000701.5+634152 | 00:07: 1.57 | +63:41:52.19 | 0.33     | 0.94±0.04  | 0.45±0.04  | ---  | ---  | 2.  | 1.5  | 2.21± 0.13     | 000701+634141   | 3.2 ± 0.5      | 1.45                    | ---              | ---                                   | ---   | ---   | 302                     |             |
| 4         | 000937.0-321630 | 00:09:37.01 | -32:16:30.97 | 34.67    | -0.89±0.12   | -1.00±0.41 | ---  | ---  | --- | ---  | 1.15± 0.65     | 000935-321636   | 388.3 ± 11.7   | 0.49                    | 000937-321630    | 15.46                                 | -0.06 | 0.587 | 0.21                    | 474         |
| 5         | 003300.9+851618 | 00:33: 0.99 | +85:16:17.09 | 0.77     | 0.05±0.03  | -0.32±0.03 | 0.1  | 2.0  | 0.2 | 2.5  | 5.31± 0.28     | 003259+851616   | 41.4 ± 2.0     | 2.55                    | ---              | ---                                   | ---   | ---   | 28                      |             |
| 6         | 004056.6+851823 | 00:40:56.62 | +85:18:23.64 | 0.73     | 0.10±0.11  | -0.40±0.13 | 0.2  | 1.6  | 0.4 | 3.0  | 0.23± 0.05     | 004055+851825   | 8.3 ± 0.5      | 1.78                    | ---              | ---                                   | ---   | ---   | 161                     |             |
| 7         | 013335.8+303627 | 01:33:35.63 | +30:36:27.79 | 1.93     | -0.46±0.05   | -0.93±0.06 | 0.4  | 0.30 | --- | ---  | 0.15± 0.02     | 013335+303629   | 3.3 ± 0.5      | 0.44                    | ---              | ---                                   | ---   | ---   | 279                     |             |
| 8         | 013351.5+303947 | 01:33:51.57 | +30:39:47.17 | 1.80     | 0.11±0.27  | -0.21±0.27 | 0.2  | 2.4  | 0.2 | 2.0  | 8.60± 3.61     | 013351+303933   | 3.2 ± 0.5      | 2.51                    | 013351+303947    | 14.38                                 | 0.480 | 0.677 | 2.65                    | 210         |
| 9         | 013354.8+303312 | 01:33:54.58 | +30:33:11.17 | 1.35     | -0.76±0.02   | -0.89±0.06 | ---  | ---  | --- | ---  | 0.40± 0.03     | 013354+303312   | 6.1 ± 0.4      | 0.98                    | ---              | ---                                   | ---   | ---   | 210                     |             |
| 10        | 013433.2+304705 | 01:34:32.74 | +30:47:58.33 | 5.91     | -0.63±0.02   | -0.83±0.04 | ---  | ---  | --- | ---  | 1.22± 0.09     | 013432+304700   | 69.9 ± 2.8     | 0.49                    | 013432+304658    | 15.35                                 | 0.224 | 0.133 | 0.75                    | 210         |
| 11        | 022715.1-031553 | 02:27:15.13 | -03:15:53.62 | 2.37     | 0.39±0.32  | -0.31±0.27 | 0.4  | 1.6  | 0.6 | 3.0  | 0.23± 0.15     | 022715-031554   | 3.2 ± 0.5      | 0.43                    | ---              | ---                                   | ---   | ---   | 89                      |             |
| 12        | 023917.9-341654 | 02:39:17.93 | -34:16:54.02 | 2.20     | -0.18±0.08   | -0.41±0.12 | 0.   | 1.8  | 0.2 | 2.7  | 0.54± 0.21     | 023918-341651   | 17.3 ± 1.1     | 2.17                    | 023917-341654    | 15.72                                 | 0.163 | 0.540 | 2.09                    | 416         |
| 13        | 023956.1-342116 | 02:39:56.10 | -34:21:16.80 | 1.81     | -0.71±0.16   | -0.82±0.46 | ---  | ---  | --- | ---  | 0.02± 0.02     | 023955-342117   | 5.3 ± 0.5      | 1.15                    | 023956-342116    | 15.7                                  | 0.488 | 0.450 | 0.64                    | 416         |
| 14        | 032635.3+284251 | 03:26:35.42 | +28:42:52.58 | 0.04     | 0.02±0.00  | -0.61±0.00 | 0.2  | 0.90 | 0.6 | 4.0  | 633.80± 1.73   | 032635+284254   | 41.1 ± 1.3     | 1.42                    | 032635+284252    | 4.027                                 | 0.046 | 0.712 | 1.79                    | 443         |
| 15        | 033111.2+435413 | 03:31:11.26 | +43:54:13.27 | 1.48     | -0.11±0.08   | 0.55±0.06  | ---  | ---  | --- | ---  | 29.02± 4.08    | 033110+435405   | 19.3 ± 1.9     | 2.78                    | ---              | ---                                   | ---   | ---   | 109                     |             |
| 16        | 033647.2+003516 | 03:36:47.22 | +00:35:15.56 | 0.04     | -0.15±0.00   | -0.58±0.00 | 0.1  | 1.2  | 0.4 | 3.5  | 620.83± 0.40   | 033647+003515   | 122.3 ± 4.4    | 0.94                    | 033647+003515    | 3.187                                 | 0.109 | 0.636 | 0.93                    | 349         |
| 17        | 034648.5+680547 | 03:46:48.64 | +68:05:46.81 | 0.29     | 0.13±0.01  | -0.53±0.01 | 0.2  | 1.0  | 0.6 | 3.5  | 5.45± 0.10     | 034648+680546   | 190.7 ± 7.3    | 1.27                    | 034648+680546    | 9.195                                 | 0.588 | 0.981 | 0.86                    | 97          |
| 18        | 035516.5+003057 | 03:55:16.53 | +00:30:57.70 | 1.78     | 0.40±0.27  | -0.08±0.27 | ---  | ---  | 0.4 | 2.0  | 1.22± 0.72     | 035516+003054   | 115.6 ± 4.1    | 1.41                    | ---              | ---                                   | ---   | ---   | 512                     |             |
| 19        | 053428.3+221425 | 05:34:28.14 | +22:14:31.65 | 2.49     | 0.52±0.04  | -0.11±0.04 | 0.4  | 2.2  | 0.6 | 2.2  | 61.72± 4.42    | 053428+221433   | 767.9 ± 23.7   | 0.86                    | ---              | ---                                   | ---   | ---   | 155                     |             |
| 20        | 053519.2-043532 | 05:35:19.30 | -04:35:32.98 | 1.01     | -0.34±0.26   | 0.63±0.16  | ---  | ---  | --- | ---  | 0.49± 0.08     | 053519-043527   | 2.3 ± 0.5      | 2.48                    | ---              | ---                                   | ---   | ---   | 369                     |             |
| 21        | 053845.2+282838 | 05:38:45.28 | +28:28:38.20 | 1.22     | 0.57±0.25  | 0.25±0.19  | ---  | ---  | 0.4 | 1.0  | 1.85± 0.62     | 053845+282838   | 10.6 ± 0.5     | 0.14                    | ---              | ---                                   | ---   | ---   | 110                     |             |
| 22        | 054539.8-253615 | 05:45:39.80 | -25:36:15.10 | 2.00     | 0.73±0.22  | -0.20±0.21 | 0.8  | 1.6  | 1.  | 3.0  | 0.15± 0.11     | 054539-253618   | 41.2 ± 1.3     | 2.15                    | ---              | ---                                   | ---   | ---   | 470                     |             |
| 23        | 054644.7-320002 | 05:46:44.78 | -32:00: 2.27 | 1.89     | 0.65±0.24  | -0.32±0.25 | 0.6  | 1.2  | 1.  | 3.5  | 0.18± 0.15     | 054645-320003   | 61.5 ± 2.2     | 2.60                    | ---              | ---                                   | ---   | ---   | 409                     |             |
| 24        | 064052.8+094858 | 06:40:52.89 | +09:48:58.21 | 1.26     | 0.99±0.08  | 0.25±0.14  | 2.   | 1.0  | --- | ---  | 0.24± 0.05     | 064052+094857   | 61.9 ± 1.9     | 0.70                    | 064052+094858    | 12.39                                 | 1.276 | 1.864 | 0.95                    | 238         |
| 25        | 074433.8+034442 | 07:44:33.88 | +03:44:42.88 | 1.03     | 0.51±0.11  | -0.39±0.12 | 0.6  | 1.2  | 0.8 | 3.5  | 0.87± 0.27     | 074433+034443   | 7.2 ± 0.5      | 0.91                    | ---              | ---                                   | ---   | ---   | 357                     |             |
| 26        | 085038.0+114708 | 08:50:38.06 | +11:47: 8.91 | 1.27     | 0.51±0.14  | -0.23±0.14 | 0.4  | 1.8  | 0.6 | 2.7  | 0.90± 0.35     | 085038+114709   | 111.2 ± 3.4    | 0.69                    | ---              | ---                                   | ---   | ---   | 28                      |             |
| 27        | 085841.5+140540 | 08:58:41.58 | +14:05:40.97 | 0.33     | 0.14±0.04  | -0.34±0.05 | 0.2  | 1.8  | 0.4 | 2.7  | 1.21± 0.12     | 085841+140539   | 189.9 ± 6.7    | 1.61                    | ---              | ---                                   | ---   | ---   | 277                     |             |
| 28        | 110049.5-344324 | 11:00:49.58 | -34:43:24.19 | 0.28     | 0.33±0.03  | -0.31±0.03 | 0.4  | 1.6  | 0.6 | 2.7  | 5.40± 0.33     | 110049-344326   | 2.3 ± 0.5      | 0.48                    | 110049-344324    | 14.38                                 | 0.766 | 0.791 | 1.51                    | 194         |
| 29        | 133146.3+111409 | 13:31:46.32 | +11:14: 9.89 | 0.75     | 0.23±0.12  | -0.20±0.12 | 0.2  | 2.2  | 0.4 | 2.2  | 0.81± 0.15     | 133146+111409   | 153.5 ± 4.6    | 1.33                    | ---              | ---                                   | ---   | ---   | 317                     |             |
| 30        | 155702.2-380219 | 15:57: 2.25 | -38:02:19.39 | 0.65     | 0.48±0.06  | -0.16±0.06 | 0.4  | 2.2  | 0.6 | 2.2  | 3.32± 0.37     | 155702-380220   | 39.1 ± 1.3     | 2.43                    | ---              | ---                                   | ---   | ---   | 236                     |             |
| 31        | 160833.8-390009 | 16:08:33.89 | -39:00: 9.95 | 1.23     | 0.94±0.13  | 0.06±0.15  | 2.   | 1.2  | 2.  | 3.2  | 0.34± 0.08     | 160833-390011   | 22.1 ± 1.2     | 1.52                    | ---              | ---                                   | ---   | ---   | 161                     |             |
| 32        | 162603.0-242336 | 16:26: 3.02 | -24:23:36.43 | 0.04     | 0.84±0.00  | -0.16±0.00 | 1.   | 1.4  | 2.  | 3.7  | 91.79± 0.81    | 162602-242339   | 6.1 ± 0.5      | 2.09                    | 162603-242336    | 6.227                                 | 0.635 | 1.228 | 1.05                    | 52          |
| 33        | 173241.0+741339 | 17:32:41.05 | +74:13:39.74 | 0.10     | -0.05±0.01   | -0.67±0.01 | 0.2  | 0.80 | --- | ---  | 102.12± 2.47   | 173240+741332   | 2.7 ± 0.5      | 3.00                    | ---              | ---                                   | ---   | ---   | 514                     |             |
| 34        | 174852.8-202137 | 17:48:52.82 | -20:21:37.62 | 1.06     | 0.62±0.10  | -0.56±0.10 | 0.8  | 0.70 | --- | ---  | 5.73± 1.11     | 174853-202134   | 4.0 ± 0.7      | 2.95                    | ---              | ---                                   | ---   | ---   | 351                     |             |
| 35        | 174948.2-370129 | 17:49:48.21 | -37:01:29.20 | 1.86     | -1.00±0.19   | -1.00±**** | ---  | ---  | --- | ---  | 0.08± 0.05     | 174948-370129   | 11.8 ± 0.6     | 0.61                    | ---              | ---                                   | ---   | ---   | 226                     |             |
| 36        | 175015.5-370616 | 17:50:15.57 | -37:06:16.59 | 1.36     | 1.00±0.16  | -0.08±0.18 | ---  | ---  | --- | ---  | 0.47± 0.18     | 175015-370616   | 61.5 ± 2.3     | 0.88                    | 175015-370616    | 13.34                                 | 0.137 | 0.621 | 2.81                    | 167         |
| 37        | 180453.0-241920 | 18:04:53.04 | -24:19:20.26 | 3.30     | 0.12±0.26  | -0.99±0.13 | ---  | ---  | --- | ---  | 0.12± 0.18     | 180452-241923   | 52.6 ± 3.9     | 1.12                    | 180453-241920    | 10.45                                 | 0.308 | 0.885 | 0.51                    | 92          |
| 38        | 180926.8-201930 | 18:09:26.60 | -20:19:27.68 | 3.67     | 0.84±0.07  | 0.77±0.02  | ---  | ---  | --- | ---  | 14.61± 0.64    | 180925-201924   | 9686.3 ± 605.0 | 2.70                    | 180926-201927    | 10.32                                 | 1.017 | 2.158 | 2.32                    | 35          |
| 39        | 183220.7-103509 | 18:32:20.77 | -10:35:11.02 | 0.61     | 0.85±0.08  | 0.92±0.01  | ---  | ---  | --- | ---  | 61.98± 0.87    | 183220-103510   | 867.4 ± 26.0   | 0.83                    | ---              | ---                                   | ---   | ---   | 36                      |             |
| 40        | 191149.5+045858 | 19:11:49.51 | +04:58:58.92 | 0.05     | 0.86±0.00  | 0.12±0.00  | 1.   | 2.4  | 1.  | 2.5  | 1364.93± 3.91  | 191149+045858   | 879.4 ± 26.4   | 0.77                    | 191149+045858    | 8.133                                 | 0.576 | 0.658 | 1.45                    | 51          |
| 41        | 203355.4+412251 | 20:33:55.46 | +41:22:51.43 | 4.16     | 0.46±0.24  | 0.35±0.17  | ---  | ---  | 0.2 | 0.50 | 1.15± 0.32     | 203355+412259   | 252.8 ± 8.6    | 2.18                    | 203355+412251    | 11.36                                 | 0.095 | 0.245 | 2.12                    | 35          |
| 42        | 203354.8+412248 | 20:33:54.84 | +41:22:48.99 | 1.59     | 0.95±0.12  | 0.20±0.18  | 2.   | 1.8  | 2.  | 2.7  | 1.07± 0.30     | 203355+412246   | 479.5 ± 18.5   | 2.36                    | 203354+412248    | 11.26                                 | 0.095 | 0.245 | 1.95                    | 278         |
| 43        | 204151.1-322607 | 20:41:51.14 | -32:26: 7.94 | 0.04     | -0.26±0.00   | -0.71±0.01 | 0.1  | 0.80 | --- | ---  | 214.88± 1.19   | 204151-322603   | 3.0 ± 0.7      | 1.11                    | 204151-322607    | 4.944                                 | 0.257 | 0.606 | 1.89                    | 443         |
| 44        | 205341.1+443142 | 20:53:41.3  |              |          |  |            |  |      |     |      |                |                 |                |                         |                  |                                       |       |       |                         |             |



Table 3—Continued

| Src.<br>#                    | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio<br>$\frac{M-S}{S+M}$<br>$\frac{H+M}{H+M}$ |            | Thermal – Non thermal |      |     |     | F <sub>X</sub><br>[cgs] | Name<br>NVSS J+ | F <sub>R</sub><br>[mJy] | R <sub>Xr</sub><br>f <sub>&lt;99%</sub> | Name<br>2MASS J+ | 2MASS<br>K | ASS Mag & Colors<br>H – K    J – H |       | R <sub>xi</sub><br>f <sub>&lt;99%</sub> | Bib.<br>Ref. |
|------------------------------|-----------------|-------------|--------------|----------|--|------------|-----------------------|------|-----|-----|-------------------------|-----------------|-------------------------|---|------------------|------------|------------------------------------|-------|---|--------------|
| 2                            | 013354.8+304521 | 01:33:54.89 | +30:45:21.54 | 2.02     | -0.88±0.15   | -1.00±0.54 | --                    | --   | --  | --  | 0.04± 0.04              | 013354+304532   | 3.8 ± 0.4               | 2.15                                    | 013354+304521    | 15.33      | 0.359                              | 0.832 | 2.86                                    | 112          |
| 3                            | 013414.6+303410 | 01:34:14.68 | +30:34:10.02 | 2.07     | 0.33±0.20  | -0.84±0.21 | 0.8                   | 0.40 | --  | --  | 0.14± 0.07              | 013414+303409   | 3.8 ± 0.7               | 0.16                                    | --               | --         | --                                 | --    | --                                      | 163          |
| 4                            | 013647.7+154749 | 01:36:47.72 | +15:47:49.19 | 8.70     | -0.64±0.09   | -0.93±0.23 | 0.1                   | 0.40 | --  | --  | 3.96± 0.91              | 013648+154814   | 24.4 ± 4.1              | 2.07                                    | 013647+154749    | 10.15      | 0.245                              | 0.539 | 0.66                                    | 436          |
| 5                            | 033332.1-360658 | 03:33:32.19 | -36:06:58.53 | 2.59     | -0.46±0.06   | -0.62±0.14 | --                    | --   | 0.2 | 3.5 | 1.44± 0.32              | 033331-360704   | 42.6 ± 3.1              | 1.78                                    | --               | --         | --                                 | --    | --                                      | 465          |
| 6                            | 052506.1-334305 | 05:25: 6.13 | -33:43: 5.31 | 0.12     | 0.16±0.01  | -0.27±0.01 | 0.2                   | 2.0  | 0.4 | 2.5 | 16.12± 0.13             | 052506-334304   | 188.3 ± 5.7             | 2.18                                    | --               | --         | --                                 | --    | --                                      | 239          |
| 7                            | 072618.0+690922 | 07:26:18.05 | +69:09:22.51 | 0.84     | 0.28±0.09  | -0.50±0.10 | 0.4                   | 1.0  | 0.6 | 3.5 | 0.53± 0.17              | 072617+690920   | 10.6 ± 0.5              | 1.14                                    | --               | --         | --                                 | --    | --                                      | 213          |
| 8                            | 095524.7+690114 | 09:55:24.81 | +69:01:14.62 | 0.59     | 0.01±0.03  | -0.75±0.03 | 0.4                   | 0.60 | --  | --  | 2.33± 0.17              | 095524+690112   | 61.6 ± 1.9              | 2.77                                    | --               | --         | --                                 | --    | --                                      | 373          |
| 9                            | 122103.4+281041 | 12:21: 3.40 | +28:10:41.29 | 1.29     | 0.34±0.17  | -0.51±0.17 | 0.4                   | 1.0  | 0.6 | 3.7 | 0.11± 0.04              | 122103+281041   | 132.6 ± 4.0             | 2.12                                    | --               | --         | --                                 | --    | --                                      | 419          |
| 10                           | 140300.8+541428 | 14:03: 0.90 | +54:14:26.76 | 2.67     | -0.48±0.05   | -0.88±0.12 | 0.1                   | 0.50 | --  | --  | 0.28± 0.06              | 140301+541420   | 6.8 ± 0.5               | 1.94                                    | --               | --         | --                                 | --    | --                                      | 206          |
| 11                           | 213430.5+510148 | 21:34:30.78 | +51:01:48.66 | 1.82     | 0.91±0.13  | 0.33±0.13  | --                    | --   | 2.  | 2.0 | 1.02± 0.26              | 213430+510145   | 108.8 ± 3.7             | 1.59                                    | --               | --         | --                                 | --    | --                                      | 455          |
| 12                           | 232333.8+584723 | 23:23:33.87 | +58:47:23.58 | 4.02     | 1.00±0.55  | 0.98±0.13  | --                    | --   | --  | --  | 19.47± 4.25             | 232334+584733   | 4008.2 ± 420.2          | 2.84                                    | 232333+584723    | 14.46      | 0.384                              | 0.687 | 1.72                                    | 8            |
| Low/High mass X-ray binaries |                 |             |              |          |  |            |                       |      |     |     |                         |                 |                         |   |                  |            |                                    |       |   |              |
| 1                            | 024031.6+611345 | 02:40:31.49 | +61:13:45.95 | 0.10     | 0.74±0.00  | -0.03±0.00 | 0.6                   | 2.2  | 1.  | 2.5 | 118.23± 0.71            | 024031+611345   | 42.2 ± 1.3              | 0.71                                    | 024031+611345    | 7.917      | 0.311                              | 0.393 | 1.21                                    | 406          |
| 2                            | 182615.0-145053 | 18:26:15.00 | -14:50:54.69 | 0.13     | 0.81±0.01  | 0.08±0.01  | 0.8                   | 2.4  | 1.  | 2.2 | 84.33± 0.79             | 182614-145054   | 23.4 ± 0.9              | 1.02                                    | 182615-145054    | 8.604      | 0.147                              | 0.273 | 0.95                                    | 42           |
| Star-forming regions (SFR)   |                 |             |              |          |  |            |                       |      |     |     |                         |                 |                         |   |                  |            |                                    |       |   |              |
| 1                            | 035333.5+315727 | 03:53:33.55 | +31:57:27.45 | 1.33     | 0.93±0.11  | -0.13±0.17 | 2.                    | 0.90 | --  | --  | 0.09± 0.04              | 035333+315726   | 16.7 ± 0.6              | 0.89                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 2                            | 035402.6+315331 | 03:54: 2.67 | +31:53:31.24 | 0.60     | 0.42±0.09  | -0.47±0.08 | 0.6                   | 1.0  | 0.8 | 3.7 | 0.21± 0.04              | 035402+315333   | 20.5 ± 0.7              | 2.70                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 3                            | 041448.0+281657 | 04:14:48.02 | +28:16:57.74 | 2.01     | 0.97±0.60  | 0.96±0.11  | --                    | --   | --  | --  | 0.17± 0.07              | 041448+281655   | 19.8 ± 0.7              | 1.18                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 4                            | 041920.9+270629 | 04:19:20.93 | +27:06:29.28 | 1.23     | 0.80±0.13  | -0.22±0.16 | 1.                    | 1.2  | 2.  | 3.7 | 0.49± 0.15              | 041921+270630   | 42.9 ± 1.3              | 2.45                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 5                            | 041950.1+272233 | 04:19:50.11 | +27:22:33.27 | 1.29     | 0.79±0.15  | -0.09±0.17 | 0.8                   | 1.8  | 1.  | 3.0 | 0.53± 0.15              | 041950+272243   | 5.8 ± 1.3               | 1.06                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 6                            | 041959.1+023132 | 04:19:59.17 | +02:31:32.16 | 0.74     | 0.40±0.09  | -0.48±0.09 | 0.4                   | 1.0  | 0.8 | 3.7 | 0.93± 0.18              | 041959+023132   | 112.2 ± 3.4             | 2.25                                    | --               | --         | --                                 | --    | --                                      | 268          |
| 7                            | 042113.0+193409 | 04:21:13.08 | +19:34: 9.80 | 3.94     | 0.65±0.13  | -0.41±0.16 | 0.8                   | 1.0  | 1.  | 4.0 | 0.60± 0.24              | 042112+193410   | 4.6 ± 0.5               | 2.82                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 8                            | 042952.5+644254 | 04:29:52.58 | +64:42:54.32 | 1.58     | 0.76±0.17  | -0.46±0.21 | 1.                    | 0.70 | --  | --  | 0.32± 0.16              | 042952+644251   | 18.7 ± 0.7              | 1.69                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 9                            | 043004.3+264527 | 04:30: 4.33 | +26:45:27.19 | 1.00     | 0.67±0.12  | -0.01±0.12 | 0.6                   | 2.4  | 0.8 | 2.2 | 2.58± 0.52              | 043004+264526   | 3.1 ± 0.4               | 2.71                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 10                           | 043004.6+261257 | 04:30: 4.62 | +26:12:57.70 | 0.90     | 0.56±0.10  | -0.31±0.12 | 0.6                   | 1.4  | 0.8 | 3.2 | 0.99± 0.23              | 043004+261259   | 2.8 ± 0.5               | 2.79                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 11                           | 043009.9+264555 | 04:30: 9.92 | +26:45:55.77 | 0.78     | 0.69±0.10  | 0.08±0.09  | --                    | --   | 0.6 | 1.7 | 2.36± 0.43              | 043009+264557   | 10.7 ± 0.5              | 1.24                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 12                           | 043117.1+175802 | 04:31:17.36 | +17:58: 3.53 | 2.04     | 0.67±0.09  | 0.05±0.08  | --                    | --   | 0.6 | 2.0 | 0.91± 0.15              | 043117+175804   | 24.8 ± 1.2              | 0.64                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 13                           | 043140.5+180325 | 04:31:40.77 | +18:03:25.43 | 4.85     | 0.90±0.22  | 0.43±0.16  | --                    | --   | 1.  | 1.0 | 0.25± 0.07              | 043140+180315   | 23.9 ± 1.3              | 1.93                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 14                           | 043144.0+181033 | 04:31:43.95 | +18:10:31.35 | 1.75     | 0.90±0.07  | 0.13±0.08  | 1.                    | 2.0  | 2.  | 2.7 | 0.26± 0.03              | 043144+181031   | 50.8 ± 1.9              | 0.58                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 15                           | 043217.8+255618 | 04:32:17.89 | +25:56:18.56 | 1.39     | 0.60±0.20  | 0.18±0.19  | --                    | --   | 0.4 | 1.2 | 0.09± 0.04              | 043218+255614   | 3.6 ± 0.4               | 2.99                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 16                           | 043229.4+181359 | 04:32:29.49 | +18:13:59.50 | 1.28     | 0.44±0.04  | -0.21±0.04 | 0.4                   | 2.0  | 0.6 | 2.5 | 1.62± 0.15              | 043229+181359   | 46.5 ± 1.5              | 0.21                                    | 043229+181359    | 13.17      | 0.520                              | 0.768 | 0.62                                    | 181          |
| 17                           | 043235.1+242021 | 04:32:35.18 | +24:20:20.25 | 0.91     | 0.80±0.05  | 0.26±0.04  | --                    | --   | 0.8 | 1.5 | 1.80± 0.12              | 043235+242018   | 108.7 ± 3.7             | 2.35                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 18                           | 043302.3+254406 | 04:33: 2.32 | +25:44: 6.58 | 0.53     | 0.79±0.05  | -0.14±0.07 | 0.8                   | 1.6  | 1.  | 3.2 | 1.12± 0.15              | 043302+254402   | 4.0 ± 0.5               | 2.86                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 19                           | 043311.0+052116 | 04:33:11.10 | +05:21:16.06 | 0.01     | 0.33±0.00  | -0.31±0.00 | 0.4                   | 1.6  | 0.6 | 2.7 | 815.91± 1.60            | 043311+052115   | 3439.0 ± 103.2          | 2.95                                    | 043311+052116    | 10.57      | 1.134                              | 0.955 | 0.98                                    | 181          |
| 20                           | 043323.3+225915 | 04:33:23.32 | +22:59:15.03 | 1.47     | 0.97±0.16  | 0.27±0.23  | 2.                    | 1.8  | 2.  | 2.7 | 0.08± 0.05              | 043323+225922   | 3.8 ± 0.5               | 2.24                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 21                           | 043334.7+242850 | 04:33:34.80 | +24:28:50.50 | 0.94     | 0.88±0.12  | 0.10±0.11  | 1.                    | 2.0  | 2.  | 2.7 | 0.35± 0.08              | 043334+242851   | 26.2 ± 0.9              | 0.45                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 22                           | 044127.3+150456 | 04:41:27.32 | +15:04:56.08 | 0.06     | 0.47±0.01  | -0.24±0.01 | 0.4                   | 1.8  | 0.6 | 2.7 | 146.07± 1.61            | 044127+150454   | 13.6 ± 0.6              | 1.73                                    | 044127+150456    | 15.35      | 0.349                              | 1.003 | 1.92                                    | 181          |
| 23                           | 044155.8+150441 | 04:41:55.83 | +15:04:41.30 | 1.78     | 0.42±0.19  | -0.48±0.19 | 0.6                   | 1.0  | 0.8 | 3.7 | 0.59± 0.23              | 044156+150440   | 17.7 ± 0.7              | 1.43                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 24                           | 045420.9+024902 | 04:54:20.99 | +02:49: 2.53 | 0.47     | 0.03±0.07  | -0.27±0.08 | 0.1                   | 2.2  | 0.2 | 2.2 | 0.61± 0.09              | 045420+024901   | 7.1 ± 0.5               | 2.79                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 25                           | 045528.7+302824 | 04:55:28.77 | +30:28:24.51 | 4.67     | 0.58±0.16  | 0.03±0.15  | --                    | --   | 0.6 | 1.7 | 0.41± 0.19              | 045528+302822   | 63.5 ± 2.3              | 1.61                                    | --               | --         | --                                 | --    | --                                      | 181          |
| 26                           | 063948.3+821846 | 06:39:48.99 | +82:18:46.76 | 1.74     | 0.04±0.03  | -0.42±0.04 | 0.1                   | 1.6  | 0.4 | 3.0 | 1.85± 0.18              | 063949+821842   | 3.5 ± 0.5               | 0.94                                    | --               | --         | --                                 | --    | --                                      | 122          |
| 27                           | 162418.7-241428 | 16:24:18.79 | -24:14:28.10 | 1.59     | 1.00±0.15  | 0.36±0.17  | --                    | --   | --  | --  | 0.43± 0.16              | 162418-241428   | 15.6 ± 0.7              | 0.59                                    | --               | --         | --                                 | --    | --                                      | 487          |
| 28                           | 162447.0-241719 | 16:24:47.04 | -24:17:19.52 | 1.37     | 1.00±0.18  | 0.46±0.15  | 4.                    | 1.0  | 4.  | 3.7 | 0.19± 0.04              | 162446-241721   | 90.9 ± 2.8              | 1.25                                    | --               | --         | --                                 | --    | --                                      | 9            |
| 29                           | 190156.2-365727 | 19:01:56.17 | -36:57:26.12 | 0.77     | 0.15±0.38  | 0.97±0.02  | --                    | --   | --  | --  | 3.84± 0.15              | 190156-365722   | 15.2 ± 1.3              | 1.58                                    | --               | --         | --                                 | --    | --                                      | 156          |
| HII regions                  |                 |             |              |          |  |            |                       |      |     |     |                         |                 |                         |   |                  |            |                                    |       |   |              |
| 1                            | 013416.6+305157 | 01:34:16.47 | +30:51:59.37 | 2.03     | -0.69±0.12   | -0.96±0.26 | 0.1                   | 0.30 | --  | --  | 0.05± 0.03              | 013416+305156   | 5.8 ± 0.5               | 1.58                                    | 013416+305159    | 13.34      | 0.624                              | 0.849 | 2.04                                    | 208          |
| 2                            | 024240.7-000046 | 02:42:40.73 | -00:00:****  | 0.01     | -0.45±0.00   | -0.68±0.00 | --                    | --   | 0.2 | 3.7 | 225.05± 0.37            | 024240-000047   | 4848.1 ± 170.4          | 1.47                                    | --               | --         | --                                 | --    | --                                      | 118          |
| 3                            | 185146.7+003533 | 18:51:46.70 | +00:35:33.42 | 0.76     | 0.92±0.27  | 0.89±0.05  | --                    | --   | --  | --  | 7.06± 0.45              | 185146+003532   | 839.9 ± 29.6            | 0.45                                    | 185146+003533    | 13.12      | 0.760                              | 1.867 | 2.88                                    | 229          |
| 4                            | 224645.8+580306 | 22:46:45.90 | +58:03: 6.26 | 1.43     | 0.97±0.16  | 0.06±0.26  | 2.                    | 1.2  | --  | --  | 0.20± 0.05              | 224646+580309   | 21.2 ± 0.8              | 1.88                                    | --               | --         | --                                 | --    | --                                      | 211          |



Table 3—Continued

| Src.<br>#         | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio    |                   | Thermal – Non thermal |      |                |     | F <sub>x</sub><br>[cgs] | Name<br>NVSS J+ | F <sub>r</sub><br>[mJy] | R <sub>xr</sub><br>f <sub>&lt;99</sub> % | Name<br>2MASS J+ | 2MASS Mag & Colors |       |       | R <sub>xi</sub><br>f <sub>&lt;99</sub> % | Bib.<br>Ref. |
|-------------------|-----------------|-------------|--------------|----------|-------------------|-------------------|-----------------------|------|----------------|-----|-------------------------|-----------------|-------------------------|--|------------------|--------------------|-------|-------|--|--------------|
|                   |                 |             |              |          | $\frac{M-S}{S+M}$ | $\frac{H-M}{H+M}$ | N <sub>H</sub>        | KT   | N <sub>H</sub> | Γ   |                         |                 |                         |  |                  | K                  | H – K | J – H |  |              |
| 1                 | 084945.5+110937 | 08:49:45.53 | +11:09:37.31 | 1.83     | 0.09±0.21         | -0.60±0.25        | 0.2                   | 0.90 | 0.6            | 4.0 | 5.63± 3.04              | 084945+110951   | 2.8 ± 0.4               | 2.38                                     | – – – – –        | –                  | –     | –     | –  | –            |
| Gamma-ray sources |                 |             |              |          |                   |                   |                       |      |                |     |                         |                 |                         |  |                  |                    |       |       |  |              |
| 1                 | 061541.0+221540 | 06:15:41.01 | +22:15:40.88 | 19.38    | -0.15±0.23        | -0.97±0.11        | 0.8                   | 0.20 | –              | –   | 0.85± 0.60              | 061541+221521   | 15.2 ± 3.0              | 1.04                                     | 061541+221540    | 15.28              | 0.242 | 0.776 | 1.06                                     | 242          |
| 2                 | 061756.9+781608 | 06:17:56.95 | +78:16: 8.10 | 0.38     | 0.15±0.04         | -0.32±0.04        | 0.2                   | 1.8  | 0.4            | 2.5 | 2.70± 0.20              | 061757+781609   | 156.6 ± 4.7             | 1.26                                     | – – – – –        | –                  | –     | –     | –  | 242          |
| 3                 | 202017.2+402615 | 20:20:17.25 | +40:26:15.01 | 0.70     | -0.20±0.09        | -0.67±0.11        | 0.1                   | 0.90 | –              | –   | 0.73± 0.23              | 202017+402607   | 5.5 ± 1.1               | 0.90                                     | 202017+402615    | 11.68              | 0.144 | 0.543 | 1.92                                     | 487          |
| Galactic Center   |                 |             |              |          |                   |                   |                       |      |                |     |                         |                 |                         |  |                  |                    |       |       |  |              |
| 1                 | 174541.5-290020 | 17:45:42.02 | -29:00:21.33 | 2.69     | 0.79±0.02         | 0.94±0.00         | –                     | –    | –              | –   | 317.42± 1.02            | 174542-290015   | 61188.0 ±4862.1         | 2.16                                     | 174542-290021    | 9.124              | 2.073 | 2.857 | 3.00                                     | 297          |



Table 4 NVSS/XMM: Extragalactic objects

| Src.<br>#       | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio<br>$\frac{M-S}{S+M}$<br>$\frac{H-M}{H+M}$ |            | Thermal – Non thermal<br>$N_H$ KT $N_H$ $\Gamma$ |      |     |     | $F_X$<br>[cgs] | Name<br>NVSS J+ | $F_R$<br>[mJy] | $R_{Xr}$<br>$f_{<99\%}$ | Name<br>2MASS J+ | 2MA<br>K | SS Mag & Colors<br>$H-K$ $J-H$ |       | $R_{xi}$<br>$f_{<99\%}$ | Redshift<br>$z$ |
|-----------------|-----------------|-------------|--------------|----------|--|------------|--|------|-----|-----|----------------|-----------------|----------------|-------------------------|------------------|----------|--------------------------------|-------|-------------------------|-----------------|
| Normal Galaxies |                 |             |              |          |  |            |  |      |     |     |                |                 |                |                         |                  |          |                                |       |                         |                 |
| 1               | 001110.4-120114 | 00:11:10.48 | -12:01:14.43 | 0.95     | -0.35±0.10   | -0.59±0.17 | --   | --   | 0.2 | 3.2 | 0.36± 0.10     | 001110-120113   | 12.8± 1.0      | 0.40                    | 001110-120114    | 12.87    | 0.437                          | 0.692 | 0.356                   | 0.020096        |
| 2               | 001501.6-390537 | 00:15: 1.69 | -39:05:37.30 | 1.87     | 0.57±0.30  | 0.13±0.25  | --   | --   | 0.6 | 1.2 | 0.17± 0.11     | 001501-390541   | 2.8± 0.5       | 1.00                    | 001501-390537    | 14.90    | 0.362                          | 0.893 | 2.629                   | 0.160006        |
| 3               | 001537.0-390946 | 00:15:37.17 | -39:09:47.41 | 2.32     | -0.29±0.15   | -0.62±0.22 | 0.01   | 1.2  | 0.2 | 3.5 | 0.07± 0.04     | 001537-390940   | 4.2± 0.5       | 2.03                    | 001537-390947    | 13.40    | 0.588                          | 0.821 | 0.787                   | 0.062843        |
| 4               | 002155.3-151738 | 00:21:55.38 | -15:17:38.34 | 1.14     | -0.24±0.13   | -0.38±0.21 | --   | --   | 0.1 | 2.5 | 0.10± 0.04     | 002155-151736   | 7.7± 0.6       | 1.10                    | 002155-151738    | 13.13    | 0.528                          | 0.734 | 1.138                   | 0.027476        |
| 5               | 002914.1+345632 | 00:29:14.16 | +34:56:32.34 | 0.29     | 0.64±0.04  | -0.04±0.04 | --   | --   | 2.  | 2.2 | 3.13± 0.17     | 002914+345632   | 1902.9± 57.1   | 0.66                    | --               | --       | --                             | --    | --                      | 0.517006        |
| 6               | 003017.4+261139 | 00:30:17.49 | +26:11:39.50 | 1.88     | 0.29±0.21  | -0.94±0.19 | 1.   | 0.30 | --  | --  | 0.06± 0.05     | 003017+261144   | 2.7± 0.4       | 3.00                    | 003017+261139    | 13.65    | 0.439                          | 0.775 | 0.587                   | 0.077006        |
| 7               | 003432.3-054330 | 00:34:32.38 | -05:43:30.65 | 1.24     | -0.36±0.16   | -0.86±0.27 | 0.2  | 0.50 | --  | --  | 0.24± 0.14     | 003432-054326   | 2.2± 0.5       | 0.37                    | --               | --       | --                             | --    | --                      | 0.013774        |
| 8               | 003600.8-271535 | 00:36: 0.83 | -27:15:35.42 | 2.50     | 0.14±0.22  | 0.09±0.19  | --   | --   | 0.1 | 1.0 | 1.01± 0.33     | 003600-271534   | 11.3± 0.6      | 2.86                    | 003600-271535    | 13.32    | 0.661                          | 0.834 | 2.535                   | 0.069044        |
| 9               | 003917.8+481211 | 00:39:17.83 | +48:12:11.35 | 1.70     | 0.76±0.24  | -0.13±0.23 | 0.8  | 2.0  | 1.  | 3.0 | 0.16± 0.12     | 003917+481210   | 13.0± 0.6      | 0.36                    | --               | --       | --                             | --    | --                      | --              |
| 10              | 003948.2+403434 | 00:39:48.21 | +40:34:34.55 | 1.25     | 0.55±0.16  | -0.32±0.18 | 0.6  | 1.6  | 0.8 | 3.0 | 0.12± 0.04     | 003948+403432   | 8.5± 0.5       | 1.75                    | --               | --       | --                             | --    | --                      | --              |
| 11              | 004006.5+402149 | 00:40: 6.54 | +40:21:49.28 | 2.08     | -0.23±0.24   | -0.58±0.41 | 0.01   | 1.2  | 0.4 | 3.5 | 0.13± 0.15     | 004006+402146   | 8.7± 0.5       | 1.64                    | 004006+402149    | 10.68    | 0.027                          | 0.229 | 2.137                   | --              |
| 12              | 004058.3+410300 | 00:40:58.37 | +41:03: 0.04 | 3.70     | -0.37±0.21   | -0.71±0.37 | 0.01   | 0.90 | --  | --  | 0.15± 0.10     | 004057+410309   | 4.1± 0.7       | 2.18                    | 004058+410300    | 14.58    | 0.674                          | 1.279 | 2.891                   | --              |
| 13              | 004141.2+410332 | 00:41:41.25 | +41:03:33.08 | 0.38     | 0.23±0.05  | -0.20±0.05 | 0.2  | 2.6  | 0.4 | 2.2 | 0.79± 0.08     | 004141+410333   | 48.1± 1.5      | 1.46                    | --               | --       | --                             | --    | --                      | --              |
| 14              | 004144.6+412620 | 00:41:44.65 | +41:26:21.45 | 1.69     | 0.41±0.14  | -0.44±0.14 | 0.4  | 1.4  | 0.8 | 3.5 | 0.56± 0.29     | 004144+412628   | 4.8± 0.4       | 1.82                    | --               | --       | --                             | --    | --                      | --              |
| 15              | 004218.5+412924 | 00:42:18.72 | +41:29:26.40 | 1.07     | 0.71±0.05  | -0.16±0.05 | 0.8  | 1.8  | 1.  | 3.0 | 1.86± 0.21     | 004218+412926   | 371.4± 11.2    | 0.33                    | --               | --       | --                             | --    | --                      | --              |
| 16              | 004241.4+411451 | 00:42:41.46 | +41:14:51.58 | 4.88     | -0.55±0.05   | -0.63±0.11 | --   | --   | 0.1 | 3.2 | 17.09± 1.29    | 004240+411453   | 26.3± 4.0      | 1.96                    | 004241+411451    | 15.58    | -1.57                          | 1.299 | 1.274                   | --              |
| 17              | 004246.0+411615 | 00:42:46.08 | +41:16:15.27 | 6.98     | -0.18±0.12   | -0.70±0.16 | 0.2  | 0.90 | --  | --  | 46.60±11.09    | 004246+411610   | 81.0± 4.6      | 0.97                    | 004246+411615    | 10.84    | 2.021                          | -1.14 | 1.183                   | --              |
| 18              | 004251.4+412633 | 00:42:51.59 | +41:26:33.50 | 1.42     | 0.68±0.05  | -0.16±0.05 | 0.8  | 2.0  | 1.  | 2.7 | 0.37± 0.04     | 004251+412633   | 21.7± 0.8      | 0.27                    | --               | --       | --                             | --    | --                      | --              |
| 19              | 004331.6+413602 | 00:43:31.65 | +41:36: 2.97 | 1.48     | 0.57±0.19  | -0.22±0.22 | 0.6  | 2.0  | 0.8 | 2.7 | 0.03± 0.02     | 004331+413613   | 6.6± 1.6       | 0.76                    | --               | --       | --                             | --    | --                      | --              |
| 20              | 004449.6+414018 | 00:44:49.62 | +41:40:18.89 | 5.20     | -0.76±0.27   | -0.07±0.54 | --   | --   | --  | --  | 0.11± 0.12     | 004449+414023   | 6.6± 0.5       | 0.82                    | 004449+414018    | 14.92    | 0.003                          | 0.427 | 1.431                   | --              |
| 21              | 004620.7+412451 | 00:46:20.78 | +41:24:51.12 | 2.04     | -0.25±0.28   | -1.00±0.42 | --   | --   | --  | --  | 0.06± 0.04     | 004621+412444   | 4.6± 0.4       | 2.16                    | --               | --       | --                             | --    | --                      | --              |
| 22              | 004648.7+422737 | 00:46:48.75 | +42:27:37.99 | 2.41     | 0.48±0.25  | -0.20±0.24 | 0.4  | 2.2  | 0.6 | 2.5 | 0.05± 0.05     | 004648+422731   | 2.5± 0.5       | 1.07                    | --               | --       | --                             | --    | --                      | --              |
| 23              | 004738.4+422023 | 00:47:38.45 | +42:20:23.17 | 0.76     | 0.37±0.09  | -0.18±0.09 | 0.4  | 2.4  | 0.6 | 2.2 | 0.58± 0.15     | 004738+422020   | 7.0± 0.5       | 2.07                    | --               | --       | --                             | --    | --                      | --              |
| 24              | 004751.0+852718 | 00:47:51.06 | +85:27:18.97 | 1.92     | 0.17±0.09  | -0.54±0.10 | 0.6  | 1.6  | 1.  | 3.7 | 0.28± 0.11     | 004752+852718   | 58.9± 2.1      | 0.90                    | 004751+852718    | 14.55    | 0.939                          | 0.631 | 1.112                   | 0.620006        |
| 25              | 005353.2-374026 | 00:53:53.30 | -37:40:24.15 | 1.43     | -0.01±0.10   | -0.12±0.11 | --   | --   | 0.1 | 1.7 | 0.15± 0.04     | 005353-374020   | 132.7± 4.7     | 2.54                    | --               | --       | --                             | --    | --                      | --              |
| 26              | 005403.5-374640 | 00:54: 3.52 | -37:46:40.04 | 2.16     | -0.55±0.31   | -1.00±0.38 | --   | --   | --  | --  | 0.19± 0.19     | 005403-374636   | 145.2± 4.4     | 1.65                    | --               | --       | --                             | --    | --                      | --              |
| 27              | 005442.5-374254 | 00:54:42.56 | -37:42:54.34 | 2.14     | -0.65±0.24   | -0.40±0.56 | --   | --   | --  | --  | 0.03± 0.03     | 005442-374257   | 4.4± 0.6       | 1.56                    | --               | --       | --                             | --    | --                      | --              |
| 28              | 005546.1+003838 | 00:55:46.19 | +00:38:38.93 | 4.98     | -0.04±0.19   | -0.41±0.25 | 0.1  | 1.8  | 0.4 | 2.7 | 0.50± 0.43     | 005546+003847   | 3.5± 0.6       | 2.45                    | 005546+003838    | 12.79    | 0.453                          | 0.716 | 0.894                   | --              |
| 29              | 005747.0-273006 | 00:57:47.01 | -27:30: 6.17 | 1.70     | -0.44±0.10   | -0.34±0.20 | --   | --   | --  | --  | 0.13± 0.04     | 005746-273004   | 3.4± 0.7       | 0.96                    | 005747-273006    | 13.36    | 0.348                          | 0.630 | 0.520                   | 0.018766        |
| 30              | 010721.2+141619 | 01:07:21.21 | +14:16:19.21 | 1.96     | 0.09±0.04  | -0.51±0.04 | 0.2  | 1.4  | 0.6 | 3.2 | 4.62± 0.59     | 010721+141618   | 4.1± 0.6       | 0.75                    | --               | --       | --                             | --    | --                      | 0.075438        |
| 31              | 010736.6+173220 | 01:07:36.69 | +17:32:20.11 | 0.91     | 0.23±0.14  | 0.05±0.12  | --   | --   | 0.2 | 1.2 | 1.07± 0.21     | 010736-173220   | 7.1± 0.5       | 2.56                    | 010736-173220    | 13.52    | 0.299                          | 0.681 | 0.654                   | 0.021387        |
| 32              | 011008.8-165111 | 01:10: 8.80 | -16:51:11.83 | 1.53     | 0.09±0.17  | -0.70±0.18 | 0.4  | 0.80 | --  | --  | 2.23± 0.75     | 011008-165109   | 43.8± 1.4      | 1.45                    | 011008-165111    | 11.58    | 0.500                          | 1.093 | 1.492                   | 0.034244        |
| 33              | 012435.0+034729 | 01:24:35.02 | +03:47:29.01 | 0.77     | 0.16±0.09  | -0.32±0.09 | 0.2  | 2.0  | 0.4 | 2.5 | 1.35± 0.17     | 012434+034729   | 176.3± 5.3     | 2.49                    | 012435+034729    | 11.45    | 1.571                          | 1.527 | 2.611                   | --              |
| 34              | 013240.2-133306 | 01:32:40.23 | -13:33: 6.89 | 0.52     | 0.74±0.06  | 0.07±0.06  | --   | --   | 2.  | 2.0 | 3.54± 0.37     | 013240-133307   | 4.6± 0.5       | 0.77                    | --               | --       | --                             | --    | --                      | 0.562006        |
| 35              | 013329.2+304539 | 01:33:29.27 | +30:45:38.28 | 1.93     | 0.70±0.09  | 0.00±0.09  | --   | --   | 0.8 | 2.0 | 0.16± 0.05     | 013329+304538   | 17.7± 0.7      | 0.13                    | --               | --       | --                             | --    | --                      | --              |
| 36              | 013429.3+310308 | 01:34:29.39 | +31:03: 8.72 | 0.45     | 0.17±0.02  | -0.36±0.03 | 0.2  | 1.8  | 0.4 | 2.7 | 2.66± 0.13     | 013429+310308   | 44.0± 1.4      | 0.33                    | --               | --       | --                             | --    | --                      | --              |
| 37              | 013508.0+310528 | 01:35: 8.24 | +31:05:27.61 | 3.35     | 0.19±0.09  | -0.42±0.10 | 0.2  | 1.6  | 0.6 | 3.0 | 0.35± 0.08     | 013507+310529   | 16.2± 0.6      | 1.64                    | --               | --       | --                             | --    | --                      | --              |
| 38              | 013522.9+302728 | 01:35:22.90 | +30:27:28.83 | 0.75     | 0.25±0.11  | -0.28±0.11 | 0.2  | 2.2  | 0.4 | 2.5 | 1.24± 0.27     | 013522+302728   | 10.6± 0.5      | 1.06                    | --               | --       | --                             | --    | --                      | --              |
| 39              | 013750.3+581410 | 01:37:50.35 | +58:14:10.46 | 0.11     | 0.59±0.01  | -0.28±0.01 | 0.6  | 1.6  | 1.  | 3.0 | 179.47± 4.47   | 013750+581413   | 170.0± 6.0     | 2.42                    | 013750+581410    | 13.85    | 0.803                          | 0.896 | 1.253                   | --              |
| 40              | 014302.3+133845 | 01:43: 2.34 | +13:38:45.81 | 0.29     | 0.22±0.04  | -0.39±0.04 | 0.4  | 1.6  | 0.6 | 3.0 | 2.86± 0.18     | 014302+133845   | 372.8± 13.9    | 2.14                    | 014302+133845    | 9.826    | 0.737                          | 1.073 | 2.525                   | --              |
| 41              | 014510.0-042422 | 01:45:10.02 | -04:24:22.89 | 1.48     | 0.06±0.20  | -0.59±0.25 | 0.4  | 1.0  | 0.6 | 3.7 | 0.06± 0.04     | 014510-042427   | 3.0± 0.5       | 2.32                    | 014510-042422    | 13.55    | 0.546                          | 0.746 | 1.073                   | --              |
| 42              | 014537.6-043401 | 01:45:37.58 | -042         |          |  |            |  |      |     |     |                |                 |                |                         |                  |          |                                |       |                         |                 |



Table 4—Continued

| Src.<br># | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio    |                   | Thermal – Non thermal |      |                |     | F <sub>x</sub><br>[cgs] | Name<br>NVSS J+ | F <sub>r</sub><br>[mJy] | R <sub>xr</sub><br>f<99% | Name<br>2MASS J+ | 2MA<br>K      | S Mag & Colors |       | R <sub>xi</sub><br>f<99% | Redshift<br>z |          |
|-----------|-----------------|-------------|--------------|----------|-------------------|-------------------|-----------------------|------|----------------|-----|-------------------------|-----------------|-------------------------|--------------------------|------------------|---------------|----------------|-------|--------------------------|---------------|----------|
|           |                 |             |              |          | $\frac{M-S}{S+M}$ | $\frac{H-M}{H+M}$ | N <sub>H</sub>        | KT   | N <sub>H</sub> | Γ   |                         |                 |                         |                          |                  |               | H – K          | J – H |                          |               |          |
| 61        | 031308.7-024319 | 03:13: 8.78 | -02:43:19.00 | 0.37     | -0.23±0.05        | -0.17±0.06        | --                    | --   | --             | --  | 2.93± 0.18              | 031308-024319   | 50.1± 1.6               | 0.96                     | 031308-024319    | 11.61         | 0.624          | 0.819 | 0.328                    | --            |          |
| 62        | 031848.1+414937 | 03:18:48.16 | +41:49:36.63 | 1.68     | 0.48±0.14         | -0.05±0.12        | --                    | --   | --             | 0.6 | 2.0                     | 0.31± 0.10      | 031848+414936           | 538.2± 19.0              | 0.04             | --            | --             | --    | --                       | --            |          |
| 63        | 032531.0-060741 | 03:25:31.04 | -06:07:41.53 | 1.87     | -0.70±0.17        | -1.00±0.62        | --                    | --   | --             | --  | --                      | 0.21± 0.10      | 032531-060741           | 4.8± 0.5                 | 2.64             | 032531-060741 | 13.17          | 0.534 | 0.818                    | 3.023         | 0.034134 |
| 64        | 032614.8-212126 | 03:26:14.82 | -21:21:26.17 | 0.43     | 0.18±0.07         | 0.12±0.06         | --                    | --   | --             | 0.1 | 1.0                     | 0.49± 0.04      | 032614-212127           | 23.4± 1.2                | 2.91             | --            | --             | --    | --                       | --            |          |
| 65        | 033201.3-274648 | 03:32: 1.35 | -27:46:48.88 | 0.93     | 0.63±0.09         | 0.55±0.06         | --                    | --   | --             | --  | --                      | 0.13± 0.01      | 033201-274649           | 55.9± 1.7                | 0.62             | --            | --             | --    | --                       | 1.070000      |          |
| 66        | 033219.1-275407 | 03:32:19.10 | -27:54: 7.16 | 2.19     | -0.10±0.08        | -0.48±0.11        | 0.1                   | 1.6  | 0.4            | 3.0 | 0.03± 0.01              | 033219-275406   | 10.9± 0.6               | 0.85                     | --               | --            | --             | --    | --                       | --            |          |
| 67        | 033229.0-274358 | 03:32:29.01 | -27:43:58.30 | 2.30     | 0.04±0.23         | -0.95±0.13        | 1.                    | 0.30 | --             | --  | --                      | 0.04± 0.02      | 033229-274356           | 5.3± 0.6                 | 2.28             | --            | --             | --    | --                       | 0.215000      |          |
| 68        | 033242.5-273816 | 03:32:42.46 | -27:38:17.08 | 1.16     | 0.68±0.04         | 0.31±0.03         | --                    | --   | --             | 0.6 | 0.75                    | 0.67± 0.04      | 033242-273817           | 93.3± 3.4                | 0.29             | --            | --             | --    | --                       | --            |          |
| 69        | 033646.1-355957 | 03:36:46.18 | -35:59:57.87 | 0.12     | -0.40±0.02        | -0.58±0.02        | --                    | --   | --             | 0.2 | 3.2                     | 7.37± 0.20      | 033646-355957           | 37.1± 1.5                | 1.42             | 033646-355957 | 10.26          | 0.566 | 0.751                    | 1.439         | --       |
| 70        | 033829.0-352702 | 03:38:29.04 | -35:27: 1.96 | 0.18     | -0.22±0.01        | -0.79±0.01        | 0.2                   | 0.70 | --             | --  | --                      | 34.73± 0.36     | 033829-352700           | 208.0± 6.9               | 1.83             | 033829-352701 | 9.761          | 0.705 | 0.875                    | 0.855         | 0.004900 |
| 71        | 034447.5+680841 | 03:44:47.56 | +68:08:42.52 | 0.71     | 0.72±0.04         | -0.16±0.05        | 0.8                   | 1.8  | 1.             | 3.0 | 0.92± 0.09              | 034447+680850   | 3.1± 0.5                | 1.42                     | --               | --            | --             | --    | --                       | --            |          |
| 72        | 034631.9+680102 | 03:46:31.92 | +68:01: 2.98 | 4.05     | -0.18±0.17        | -0.33±0.25        | 0.                    | 2.2  | 0.1            | 2.2 | 0.14± 0.09              | 034632+680102   | 14.9± 1.4               | 0.37                     | --               | --            | --             | --    | --                       | --            |          |
| 73        | 035348.8-102015 | 03:53:48.84 | -10:20:15.08 | 0.29     | 0.05±0.03         | -0.36±0.03        | --                    | --   | --             | 1.  | 2.5                     | 1.75± 0.10      | 035348-102014           | 19.1± 0.7                | 2.51             | --            | --             | --    | --                       | 0.870000      |          |
| 74        | 035438.9-203009 | 03:54:38.96 | -20:30: 9.65 | 0.17     | -0.21±0.02        | -0.17±0.03        | --                    | --   | --             | 0.  | 1.7                     | 10.48± 0.34     | 035438-203008           | 237.8± 8.4               | 2.93             | --            | --             | --    | --                       | --            |          |
| 75        | 040234.4+714222 | 04:02:34.41 | +71:42:22.71 | 2.07     | 0.28±0.10         | -0.21±0.11        | 0.2                   | 2.4  | 0.4            | 2.2 | 0.68± 0.15              | 040233+714221   | 14.8± 1.3               | 1.11                     | 040234+714222    | 11.54         | 0.249          | 1.033 | 1.241                    | 0.015277      |          |
| 76        | 041641.4+011059 | 04:16:41.41 | +01:10:59.03 | 1.58     | 0.15±0.18         | -0.46±0.22        | 0.2                   | 1.4  | 0.6            | 3.2 | 0.16± 0.07              | 041641+011052   | 5.3± 0.5                | 1.94                     | 041641+011059    | 13.21         | 0.747          | 0.797 | 0.373                    | 0.073991      |          |
| 77        | 041911.9+555242 | 04:19:11.94 | +55:52:42.22 | 2.05     | 0.50±0.14         | -0.72±0.14        | 1.                    | 0.60 | --             | --  | --                      | 0.13± 0.07      | 041911+555245           | 34.0± 1.7                | 1.33             | --            | --             | --    | --                       | 0.017543      |          |
| 78        | 041937.9+022434 | 04:19:37.93 | +02:24:34.06 | 0.19     | 0.04±0.00         | -0.75±0.00        | 0.4                   | 0.70 | --             | --  | --                      | 58.54± 0.38     | 041937+022435           | 16.6± 1.6                | 1.21             | --            | --             | --    | --                       | 0.012349      |          |
| 79        | 042551.3-083337 | 04:25:51.30 | -08:33:37.63 | 0.11     | 0.30±0.00         | -0.46±0.00        | 0.4                   | 1.4  | 0.6            | 3.2 | 179.42± 0.71            | 042551-083336   | 112.4± 3.4              | 1.18                     | --               | --            | --             | --    | --                       | 0.038223      |          |
| 80        | 042929.3+263154 | 04:29:29.35 | +26:31:54.75 | 2.06     | -0.19±0.07        | -0.41±0.10        | --                    | --   | --             | 0.2 | 2.5                     | 0.79± 0.16      | 042929+263153           | 17.8± 0.7                | 1.22             | 042929+263154 | 11.57          | 0.358 | 0.914                    | 1.275         | --       |
| 81        | 042944.3+260245 | 04:29:44.32 | +26:02:45.60 | 2.86     | 0.79±0.17         | -0.64±0.29        | 2.                    | 0.50 | --             | --  | --                      | 0.09± 0.09      | 042944+260249           | 85.2± 2.9                | 1.11             | --            | --             | --    | --                       | --            |          |
| 82        | 043344.6+242840 | 04:33:44.66 | +24:28:40.55 | 1.25     | 0.76±0.14         | 0.18±0.13         | --                    | --   | --             | 0.8 | 1.5                     | 0.27± 0.08      | 043344+242840           | 11.3± 1.0                | 1.46             | --            | --             | --    | --                       | 0.015851      |          |
| 83        | 044725.3-032932 | 04:47:25.36 | -03:29:32.94 | 2.50     | -0.44±0.33        | -1.00±0.43        | --                    | --   | --             | --  | --                      | 0.10± 0.17      | 044725-032935           | 25.8± 0.9                | 1.72             | --            | --             | --    | --                       | --            |          |
| 84        | 044801.5-202702 | 04:48: 1.56 | -20:27: 2.85 | 7.87     | 0.18±0.10         | -0.51±0.14        | 0.4                   | 1.2  | 0.6            | 3.5 | 5.10± 2.40              | 044801-202718   | 122.2± 4.0              | 2.05                     | --               | --            | --             | --    | --                       | 0.009397      |          |
| 85        | 044900.4-061612 | 04:49: 0.42 | -06:16:12.26 | 1.20     | 0.28±0.17         | -0.33±0.16        | 0.4                   | 1.8  | 0.6            | 2.7 | 0.25± 0.08              | 044900-061617   | 4.2± 0.5                | 1.67                     | --               | --            | --             | --    | --                       | --            |          |
| 86        | 044937.3-203922 | 04:49:37.34 | -20:39:22.71 | 1.96     | -0.24±0.19        | -0.54±0.30        | 0.01                  | 1.4  | 0.2            | 3.2 | 0.57± 0.51              | 044937-203922   | 26.2± 1.2               | 0.12                     | --               | --            | --             | --    | --                       | --            |          |
| 87        | 045006.6+450309 | 04:50: 6.67 | +45:03: 9.48 | 3.92     | 0.91±0.06         | -0.23±0.10        | 2.                    | 0.90 | --             | --  | --                      | 19.53± 3.50     | 045005+450304           | 499.6± 19.2              | 2.24             | 045006+450309 | 12.05          | 0.597 | 1.181                    | 0.827         | --       |
| 88        | 045218.7-030446 | 04:52:18.75 | -03:04:46.70 | 1.33     | 0.30±0.22         | -0.48±0.24        | 0.4                   | 1.2  | 0.8            | 3.5 | 0.16± 0.10              | 045218-030445   | 36.3± 1.5               | 2.51                     | --               | --            | --             | --    | --                       | 0.014766      |          |
| 89        | 050047.3-242028 | 05:00:47.32 | -24:20:28.37 | 1.70     | 0.19±0.37         | 0.89±0.15         | --                    | --   | --             | --  | --                      | 0.05± 0.03      | 050047-242029           | 2.3± 0.5                 | 0.68             | --            | --             | --    | --                       | 0.055795      |          |
| 90        | 050112.8-242301 | 05:01:12.81 | -24:23: 1.57 | 0.08     | 0.01±0.01         | -0.35±0.02        | 0.1                   | 2.0  | 0.2            | 2.5 | 8.54± 0.19              | 050112-242301   | 135.1± 4.1              | 1.16                     | --               | --            | --             | --    | --                       | 0.053890      |          |
| 91        | 050114.9-383811 | 05:01:14.91 | -38:38:11.44 | 1.58     | -0.50±0.14        | -0.44±0.28        | --                    | --   | --             | --  | --                      | 0.21± 0.09      | 050114-383810           | 10.0± 1.2                | 1.17             | 050114-383811 | 13.88          | 0.542 | 0.797                    | 1.730         | 0.055202 |
| 92        | 051045.0-341735 | 05:10:45.08 | -34:17:35.68 | 1.79     | 0.46±0.34         | 0.59±0.29         | --                    | --   | --             | --  | --                      | 0.37± 0.14      | 051044-341737           | 3.8± 0.5                 | 1.49             | --            | --             | --    | --                       | 0.094212      |          |
| 93        | 054442.6+090344 | 05:44:42.65 | +09:03:44.87 | 6.32     | 0.51±0.13         | -0.30±0.12        | 0.6                   | 1.8  | 0.8            | 3.0 | 0.50± 0.23              | 054443+090355   | 8.9± 0.5                | 2.70                     | --               | --            | --             | --    | --                       | 0.035905      |          |
| 94        | 054519.3-255601 | 05:45:19.31 | -25:56: 1.62 | 26.24    | 0.10±0.31         | 0.01±0.36         | --                    | --   | --             | 0.1 | 1.2                     | 1.14± 0.62      | 054520-255553           | 6.7± 0.5                 | 0.56             | 054519-255601 | 13.64          | 0.344 | 0.678                    | 0.948         | 0.038733 |
| 95        | 060506.4-352217 | 06:05: 6.47 | -35:22:17.70 | 0.51     | 0.15±0.07         | -0.15±0.07        | --                    | --   | --             | 0.4 | 2.0                     | 1.21± 0.19      | 060506-352217           | 261.4± 7.9               | 0.78             | --            | --             | --    | --                       | --            |          |
| 96        | 061343.5-234701 | 06:13:43.55 | -23:47: 1.18 | 1.68     | 0.55±0.19         | 0.24±0.15         | --                    | --   | --             | 0.4 | 1.0                     | 0.63± 0.33      | 061343-234709           | 4.0± 0.6                 | 2.09             | --            | --             | --    | --                       | --            |          |
| 97        | 062523.8-372309 | 06:25:23.80 | -37:23:10.00 | 1.17     | -0.11±0.19        | -0.06±0.20        | --                    | --   | --             | --  | --                      | 0.56± 0.18      | 062523-372320           | 3.4± 0.5                 | 2.16             | --            | --             | --    | --                       | --            |          |
| 98        | 062630.9-352709 | 06:26:30.93 | -35:27: 7.78 | 1.03     | 0.06±0.13         | -0.38±0.12        | 0.2                   | 1.8  | 0.4            | 2.7 | 0.50± 0.17              | 062631-352710   | 47.6± 2.1               | 2.19                     | 062630-352707    | 14.40         | 0.535          | 0.764 | 0.400                    | --            |          |
| 99        | 063041.2-282659 | 06:30:41.26 | -28:26:59.61 | 1.56     | 0.24±0.25         | -0.11±0.24        | --                    | --   | --             | 0.4 | 1.7                     | 0.27± 0.11      | 063041-282700           | 15.0± 0.6                | 0.63             | --            | --             | --    | --                       | --            |          |
| 100       | 064052.6+092952 | 06:40:52.66 | +09:29:52.62 | 0.89     | -0.69±0.47        | 0.95±0.09         | --                    | --   | --             | --  | --                      | 0.31± 0.05      | 064052+092954           | 23.6± 1.2                | 2.00             | --            | --             | --    | --                       | --            |          |
| 101       | 065008.6+605044 | 06:50: 8.68 | +60:50:44.77 | 0.32     | -0.07±0.06        | -0.01±0.06        | --                    | --   | --             | --  | --                      | 12.42± 0.58     | 065008+605044           | 62.6± 2.3                | 0.73             | 065008+605044 | 10.57          | 0.497 | 0.877                    | 0.366         | --       |
| 102       | 070833.9-004145 | 07:08:33.92 | -00:41:45.92 | 2.28     | 0.25±0.29         | 0.06±0.27         | --                    | --   | --             | 0.2 | 1.2                     | 0.17± 0.12      | 070833-004146           | 17.4± 0.7                | 2.62             | --            | --             | --    | --                       | 0.017432      |          |
| 103       | 073529.3+433653 | 07:35:29.33 | +43:36:53.31 | 1        |                   |                   |                       |      |                |     |                         |                 |                         |                          |                  |               |                |       |                          |               |          |



Table 4—Continued

| Src.<br># | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio    |                   | Thermal – Non thermal |      |                |     | F <sub>x</sub><br>[cgs] | Name<br>NVSS J+ | F <sub>r</sub><br>[mJy] | R <sub>xr</sub><br>f <sub>&lt;99%</sub> | Name<br>2MASS J+ | 2MASS<br>K | Mag & Colors |       | R <sub>xi</sub><br>f <sub>&lt;99%</sub> | Redshift<br>z |
|-----------|-----------------|-------------|--------------|----------|-------------------|-------------------|-----------------------|------|----------------|-----|-------------------------|-----------------|-------------------------|---|------------------|------------|--------------|-------|---|---------------|
|           |                 |             |              |          | $\frac{M-S}{S+M}$ | $\frac{H-M}{H+M}$ | N <sub>H</sub>        | KT   | N <sub>H</sub> | Γ   |                         |                 |                         |   |                  |            | H – K        | J – H |   |               |
| 122       | 095933.9+684411 | 09:59:33.96 | +68:44:11.64 | 1.42     | 0.11±0.14         | -0.79±0.16        | 0.6                   | 0.60 | --             | --  | 0.10± 0.06              | 095933+684407   | 17.6± 1.0               | 2.72                                    | --               | --         | --           | --    | --                                      |               |
| 123       | 100045.7+013928 | 10:00:45.75 | +01:39:28.57 | 4.01     | -0.19±0.09        | -0.28±0.13        | --                    | --   | 0.1            | 2.0 | 2.18± 1.10              | 100045+013915   | 3.8± 0.6                | 1.62                                    | 100045+013928    | 14.57      | 0.659        | 0.814 | 0.904                                   | 0.220600      |
| 124       | 100157.8+554047 | 10:01:57.80 | +55:40:47.92 | 0.58     | 0.99±0.03         | -0.11±0.04        | 4.                    | 0.60 | --             | --  | 3.97± 0.16              | 100157+554048   | 769.4± 27.1             | 0.70                                    | 100157+554047    | 9.645      | 0.941        | 1.329 | 0.851                                   | --            |
| 125       | 100201.3+021332 | 10:02: 1.42 | +02:13:32.39 | 1.22     | 0.12±0.03         | -0.42±0.03        | --                    | --   | 2.             | 3.0 | 1.19± 0.11              | 100201+021325   | 6.3± 0.5                | 2.68                                    | --               | --         | --           | --    | 0.900000                                |               |
| 126       | 100259.0+022034 | 10:02:59.08 | +02:20:34.68 | 1.06     | -0.33±0.14        | -0.44±0.23        | --                    | --   | 0.1            | 2.5 | 0.91± 0.21              | 100258+022037   | 9.6± 0.5                | 1.62                                    | 100259+022034    | 13.44      | 0.397        | 0.799 | 0.344                                   | 0.044197      |
| 127       | 100318.7+684359 | 10:03:18.77 | +68:43:59.69 | 0.86     | 0.30±0.09         | -0.17±0.08        | --                    | --   | 0.4            | 2.0 | 0.69± 0.13              | 100318+684400   | 29.0± 1.5               | 0.53                                    | 100318+684359    | 11.51      | 0.644        | 0.953 | 2.799                                   | --            |
| 128       | 101618.7-333350 | 10:16:18.71 | -33:33:50.06 | 0.09     | -0.34±0.01        | -0.21±0.02        | --                    | --   | --             | --  | 6.13± 0.10              | 101618-333350   | 31.0± 1.6               | 1.93                                    | 101618-333350    | 11.27      | 0.535        | 0.684 | 1.475                                   | --            |
| 129       | 102901.2+293805 | 10:29: 1.26 | +29:38: 5.63 | 2.14     | -0.38±0.26        | -0.28±0.41        | --                    | --   | --             | --  | 0.08± 0.08              | 102901+293811   | 2.5± 0.4                | 1.62                                    | --               | --         | --           | --    | 0.036869                                |               |
| 130       | 103245.7+585136 | 10:32:45.71 | +58:51:36.51 | 4.19     | -0.32±0.22        | -0.29±0.36        | --                    | --   | 0.             | 2.0 | 1.98± 0.77              | 103246+585135   | 3.5± 0.4                | 1.72                                    | 103245+585136    | 12.29      | 0.298        | 0.455 | 0.235                                   | --            |
| 131       | 103259.6+575320 | 10:32:59.70 | +57:53:20.34 | 1.31     | 0.26±0.18         | -0.62±0.26        | 0.6                   | 1.0  | --             | --  | 0.10± 0.06              | 103300+575324   | 2.4± 0.5                | 1.93                                    | 103259+575320    | 13.90      | 0.498        | 0.603 | 1.108                                   | 0.123000      |
| 132       | 103952.4+205049 | 10:39:52.47 | +20:50:49.71 | 1.00     | 0.30±0.14         | -0.22±0.14        | 0.4                   | 2.4  | 0.4            | 2.2 | 0.60± 0.13              | 103952+205051   | 6.8± 0.5                | 0.83                                    | 103952+205049    | 12.87      | 0.351        | 0.706 | 0.367                                   | 0.046132      |
| 133       | 104028.3+091057 | 10:40:28.35 | +09:10:57.67 | 0.71     | -0.14±0.07        | -0.73±0.09        | 0.2                   | 0.80 | --             | --  | 0.25± 0.04              | 104028+091057   | 68.3± 2.1               | 0.60                                    | 104028+091057    | 11.52      | 0.634        | 0.714 | 0.664                                   | 0.019427      |
| 134       | 104144.3+400227 | 10:41:44.32 | +40:02:27.97 | 1.07     | -0.53±0.13        | -0.40±0.30        | --                    | --   | --             | --  | 0.19± 0.12              | 104144+400231   | 5.6± 0.4                | 1.45                                    | 104144+400227    | 12.20      | 0.390        | 0.664 | 1.252                                   | --            |
| 135       | 104352.5-011741 | 10:43:52.60 | -01:17:41.22 | 0.72     | 0.02±0.08         | -0.54±0.09        | 0.2                   | 1.2  | 0.6            | 3.5 | 1.04± 0.24              | 104352-011741   | 26.0± 1.2               | 0.46                                    | 104352-011741    | 12.34      | 0.647        | 0.672 | 1.397                                   | 0.026200      |
| 136       | 104456.3+214025 | 10:44:56.28 | +21:40:25.04 | 2.09     | 0.49±0.17         | 0.04±0.16         | --                    | --   | 0.4            | 1.5 | 0.31± 0.05              | 104456+214022   | 3.4± 0.5                | 2.84                                    | 104456+214025    | 13.46      | 0.460        | 0.913 | 0.078                                   | --            |
| 137       | 105401.4-115326 | 10:54: 1.45 | -11:53:26.83 | 1.93     | -0.08±0.21        | -0.79±0.29        | 0.4                   | 0.60 | --             | --  | 0.05± 0.03              | 105401-115326   | 13.8± 0.6               | 1.26                                    | 105401-115326    | 14.87      | 1.024        | 0.642 | 0.593                                   | --            |
| 138       | 110250.1-233530 | 11:02:50.14 | -23:35:30.81 | 3.00     | 0.29±0.25         | -0.57±0.22        | 0.6                   | 1.0  | 0.8            | 4.0 | 0.16± 0.13              | 110250-233539   | 3.7± 0.6                | 2.83                                    | 110250-233530    | 13.75      | 0.329        | 0.640 | 0.229                                   | 0.012145      |
| 139       | 110353.9+405100 | 11:03:53.93 | +40:51: 0.54 | 0.59     | -0.52±0.05        | -0.42±0.10        | --                    | --   | --             | --  | 0.60± 0.08              | 110353+405059   | 36.4± 1.2               | 0.94                                    | --               | --         | --           | --    | 0.034524                                |               |
| 140       | 111548.6-215509 | 11:15:48.63 | -21:55: 9.75 | 0.72     | -0.55±0.08        | -0.10±0.16        | --                    | --   | --             | --  | 0.33± 0.06              | 111548-215508   | 5.1± 0.5                | 2.23                                    | --               | --         | --           | --    | --                                      |               |
| 141       | 111703.3+411216 | 11:17: 3.37 | +41:12:16.15 | 2.64     | 0.67±0.25         | -0.32±0.39        | 0.8                   | 1.4  | 1.             | 3.5 | 0.25± 0.29              | 111702+411221   | 2.9± 0.4                | 2.26                                    | 111703+411216    | 14.23      | 0.475        | 0.613 | 1.727                                   | --            |
| 142       | 112214.7+241754 | 11:22:14.72 | +24:17:54.06 | 6.79     | -0.34±0.17        | -0.68±0.31        | 0.01                  | 1.0  | 0.4            | 4.0 | 0.44± 0.17              | 112214+241756   | 2.5± 0.5                | 0.33                                    | --               | --         | --           | --    | --                                      |               |
| 143       | 114132.1-122710 | 11:41:32.17 | -12:27:10.54 | 2.57     | -0.18±0.31        | -0.74±0.22        | 0.2                   | 0.70 | --             | --  | 0.05± 0.06              | 114132-122712   | 5.6± 0.6                | 1.39                                    | --               | --         | --           | --    | 0.070000                                |               |
| 144       | 114811.9+525107 | 11:48:11.95 | +52:51: 7.02 | 1.72     | -0.00±0.18        | -0.88±0.18        | 0.6                   | 0.40 | --             | --  | 0.41± 0.23              | 114812+525110   | 18.0± 1.3               | 2.01                                    | 114811+525107    | 13.31      | -0.03        | 1.005 | 1.182                                   | 0.050000      |
| 145       | 115050.9+550836 | 11:50:50.90 | +55:08:36.42 | 1.23     | -0.35±0.14        | -0.09±0.18        | --                    | --   | --             | --  | 0.19± 0.05              | 115051+550831   | 3.9± 0.5                | 1.40                                    | --               | --         | --           | --    | 0.019113                                |               |
| 146       | 115107.0+550443 | 11:51: 7.03 | +55:04:43.15 | 0.21     | -0.13±0.03        | 0.01±0.03         | --                    | --   | --             | --  | 4.16± 0.14              | 115106+550445   | 8.3± 0.5                | 2.61                                    | --               | --         | --           | --    | --                                      |               |
| 147       | 115128.8-284349 | 11:51:28.88 | -28:43:49.87 | 0.50     | 0.36±0.06         | -0.37±0.07        | 0.4                   | 1.6  | 0.6            | 3.0 | 0.88± 0.11              | 115128-284350   | 10.7± 0.6               | 0.49                                    | --               | --         | --           | --    | --                                      |               |
| 148       | 115732.1+435716 | 11:57:32.14 | +43:57:16.98 | 1.33     | -0.07±0.15        | -0.42±0.22        | 0.1                   | 1.8  | 0.2            | 2.7 | 0.11± 0.05              | 115732+435715   | 7.1± 0.5                | 0.82                                    | 115732+435716    | 13.96      | 0.486        | 0.631 | 0.443                                   | 0.069600      |
| 149       | 120152.4-185206 | 12:01:52.50 | -18:52: 6.04 | 1.02     | 0.36±0.20         | -0.87±0.12        | 1.                    | 0.40 | --             | --  | 0.07± 0.02              | 120152-185205   | 257.4± 8.6              | 2.14                                    | --               | --         | --           | --    | --                                      |               |
| 150       | 121357.9+140400 | 12:13:57.89 | +14:04: 2.07 | 2.09     | -0.41±0.07        | -0.62±0.13        | --                    | --   | 0.2            | 3.5 | 0.11± 0.02              | 121357+140409   | 4.0± 0.5                | 1.23                                    | 121357+140402    | 13.86      | 0.693        | 0.530 | 0.901                                   | 0.152000      |
| 151       | 121845.7+142645 | 12:18:45.70 | +14:26:45.48 | 0.92     | 0.43±0.16         | -0.05±0.13        | --                    | --   | 0.4            | 1.7 | 0.27± 0.06              | 121845+142644   | 27.3± 1.5               | 2.59                                    | --               | --         | --           | --    | --                                      |               |
| 152       | 121846.2+471428 | 12:18:46.29 | +47:14:26.91 | 1.44     | 0.48±0.07         | -0.31±0.07        | 0.6                   | 1.6  | 0.8            | 3.0 | 0.21± 0.03              | 121846+471426   | 16.9± 0.6               | 0.77                                    | --               | --         | --           | --    | --                                      |               |
| 153       | 121901.3+471526 | 12:19: 1.42 | +47:15:26.37 | 1.64     | -0.77±0.12        | -0.96±0.27        | 0.1                   | 0.30 | --             | --  | 0.07± 0.03              | 121901+471522   | 5.2± 0.4                | 1.47                                    | 121901+471526    | 14.78      | 0.483        | 0.374 | 0.883                                   | --            |
| 154       | 122542.8+003421 | 12:25:42.84 | +00:34:21.36 | 0.75     | -0.26±0.09        | -0.67±0.11        | 0.1                   | 1.0  | 0.4            | 4.0 | 0.41± 0.07              | 122542+003423   | 13.1± 0.6               | 1.20                                    | 122542+003421    | 11.90      | 0.561        | 0.723 | 0.785                                   | 0.007142      |
| 155       | 122557.9+333144 | 12:25:57.90 | +33:31:44.16 | 2.02     | -0.87±0.08        | -1.00±0.13        | --                    | --   | --             | --  | 0.07± 0.02              | 122557+333143   | 7.3± 1.3                | 2.62                                    | --               | --         | --           | --    | 0.000981                                |               |
| 156       | 122745.6+130031 | 12:27:45.61 | +13:00:31.87 | 0.19     | -0.31±0.02        | -0.67±0.03        | 0.01                  | 1.0  | 0.4            | 3.7 | 3.29± 0.19              | 122745+130031   | 63.3± 2.7               | 2.27                                    | 122745+130031    | 9.789      | -0.14        | 1.152 | 1.893                                   | --            |
| 157       | 122942.1+080011 | 12:29:42.19 | +08:00:11.22 | 1.74     | -0.18±0.17        | -0.31±0.16        | 0.                    | 2.4  | 0.1            | 2.2 | 0.42± 0.07              | 122941+080019   | 14.7± 1.3               | 2.80                                    | --               | --         | --           | --    | 0.003341                                |               |
| 158       | 123055.7+414704 | 12:30:55.75 | +41:47: 4.29 | 1.90     | -0.69±0.17        | -0.14±0.25        | --                    | --   | --             | --  | 0.10± 0.09              | 123055+414705   | 14.1± 0.6               | 2.34                                    | 123055+414704    | 14.05      | 0.660        | 0.666 | 1.732                                   | --            |
| 159       | 123144.3+413729 | 12:31:44.35 | +41:37:29.38 | 3.62     | -0.05±0.08        | -0.51±0.11        | 0.2                   | 1.6  | 0.6            | 3.2 | 2.09± 0.88              | 123143+413737   | 39.1± 1.5               | 2.82                                    | 123144+413729    | 14.45      | 0.773        | 0.710 | 1.902                                   | 0.175740      |
| 160       | 123252.9+640849 | 12:32:52.93 | +64:08:49.95 | 1.29     | -0.57±0.14        | -0.61±0.37        | --                    | --   | 0.01           | 3.2 | 0.11± 0.11              | 123252+640849   | 3.3± 0.4                | 2.45                                    | 123252+640849    | 12.80      | 0.394        | 0.611 | 1.318                                   | --            |
| 161       | 123302.1+000016 | 12:33: 2.18 | +00:00:16.07 | 3.14     | -0.11±0.15        | -0.24±0.20        | --                    | --   | 0.1            | 2.0 | 0.13± 0.06              | 123302+000013   | 3.1± 0.4                | 1.31                                    | 123302+000016    | 14.71      | 0.594        | 0.867 | 1.457                                   | 0.084230      |
| 162       | 123353.5+373252 | 12:33:53.59 | +37:32:52.88 | 1.92     | -0.18±0.22        | -0.90±0.32        | 0.4                   | 0.40 | --             | --  | 0.15± 0.15              | 123353+373249   |                         |   |                  |            |              |       |   |               |



Table 4—Continued

| Src.<br># | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio    |                   | Thermal – Non thermal |      |                |      | F <sub>x</sub><br>[cgs] | Name<br>NVSS J+ | F <sub>r</sub><br>[mJy] | R <sub>xr</sub><br>f <sub>&lt;99%</sub> | Name<br>2MASS J+ | 2MASS<br>K | S Mag & Colors |       | R <sub>xi</sub><br>f <sub>&lt;99%</sub> | Redshift<br>z |
|-----------|-----------------|-------------|--------------|----------|-------------------|-------------------|-----------------------|------|----------------|------|-------------------------|-----------------|-------------------------|---|------------------|------------|----------------|-------|---|---------------|
|           |                 |             |              |          | $\frac{M-S}{S+M}$ | $\frac{H-M}{H+M}$ | N <sub>H</sub>        | KT   | N <sub>H</sub> | Γ    |                         |                 |                         |   |                  |            | H – K          | J – H |   |               |
| 183       | 130417.0-303134 | 13:04:17.07 | -30:31:34.77 | 0.33     | -0.05±0.04        | -0.46±0.05        | 0.1                   | 1.6  | 0.4            | 3.0  | 1.48± 0.10              | 130417-303133   | 39.8± 1.6               | 2.78                                    | 130417-303134    | 10.47      | 0.570          | 0.723 | 1.409                                   | 0.010757      |
| 184       | 130916.0+292201 | 13:09:16.07 | +29:22: 1.66 | 0.77     | -0.54±0.08        | -0.64±0.19        | --                    | --   | 0.1            | 3.5  | 0.14± 0.05              | 130916+292202   | 5.0± 0.4                | 2.27                                    | --               | --         | --             | --    | --                                      | 0.021078      |
| 185       | 131121.7+273031 | 13:11:21.70 | +27:30:31.40 | 0.74     | -0.13±0.12        | 0.05±0.12         | --                    | --   | --             | --   | 0.14± 0.03              | 131121+273030   | 2.6± 0.5                | 1.72                                    | 131121+273031    | 14.35      | 0.311          | 0.811 | 1.340                                   | --            |
| 186       | 131346.6-162007 | 13:13:46.63 | -16:20: 7.44 | 0.47     | 0.16±0.08         | -0.28±0.08        | 0.2                   | 2.2  | 0.4            | 2.5  | 0.23± 0.04              | 131346-162006   | 217.3± 6.5              | 1.18                                    | 131346-162007    | 15.45      | 0.825          | 0.611 | 0.404                                   | --            |
| 187       | 132035.3+340821 | 13:20:35.34 | +34:08:21.54 | 0.29     | 0.19±0.04         | -0.37±0.04        | 0.2                   | 1.8  | 0.4            | 2.7  | 1.54± 0.09              | 132035+340822   | 104.4± 3.2              | 1.77                                    | 132035+340821    | 11.85      | 0.824          | 1.085 | 1.120                                   | 0.023079      |
| 188       | 132525.5+301824 | 13:25:25.54 | +30:18:24.50 | 0.87     | 0.08±0.11         | -0.12±0.11        | --                    | --   | 0.4            | 1.7  | 0.21± 0.05              | 132525+301823   | 18.7± 0.7               | 0.51                                    | --               | --         | --             | --    | --                                      | 0.500000      |
| 189       | 132952.5+471144 | 13:29:52.58 | +47:11:44.63 | 0.18     | -0.55±0.01        | -0.56±0.01        | --                    | --   | --             | 0.01 | 3.0                     | 19.28± 0.28     | 132952+471145           | 427.1± 13.4                             | 2.27             | --         | --             | --    | --                                      | --            |
| 190       | 133051.6-014642 | 13:30:51.64 | -01:46:42.43 | 1.39     | -0.98±0.07        | 0.38±0.47         | --                    | --   | --             | --   | 0.05± 0.02              | 133051-014645   | 8.9± 0.5                | 1.55                                    | 133051-014642    | 13.16      | 0.552          | 0.627 | 0.697                                   | 0.036746      |
| 191       | 133059.1+581452 | 13:30:59.17 | +58:14:52.11 | 1.75     | -0.05±0.19        | -0.61±0.26        | 0.4                   | 1.4  | 1.             | 3.7  | 2.52± 0.97              | 133058+581455   | 49.7± 1.5               | 2.36                                    | 133059+581452    | 15.12      | 0.533          | 0.729 | 0.862                                   | 0.311130      |
| 192       | 133224.3+110623 | 13:32:24.36 | +11:06:23.29 | 1.87     | -0.30±0.21        | -0.82±0.23        | 0.2                   | 0.60 | --             | --   | 0.78± 0.49              | 133224+110620   | 35.2± 1.1               | 2.57                                    | 133224+110623    | 12.32      | 0.575          | 0.809 | 2.652                                   | 0.032221      |
| 193       | 133329.1+375559 | 13:33:29.13 | +37:55:58.02 | 2.09     | 0.10±0.16         | -0.65±0.19        | 0.8                   | 1.2  | --             | --   | 0.16± 0.09              | 133328+375600   | 153.0± 5.4              | 1.42                                    | --               | --         | --             | --    | --                                      | 0.390000      |
| 194       | 133340.8-311957 | 13:33:40.83 | -31:19:57.52 | 1.75     | -0.19±0.20        | -0.90±0.25        | 0.4                   | 0.40 | --             | --   | 0.07± 0.06              | 133340-312006   | 4.7± 0.5                | 2.23                                    | 133340-311957    | 12.70      | 0.311          | 0.396 | 2.373                                   | --            |
| 195       | 133438.5+380626 | 13:34:38.49 | +38:06:26.79 | 0.67     | -0.07±0.05        | -0.40±0.06        | 0.1                   | 2.2  | 0.4            | 2.7  | 0.33± 0.05              | 133438+380629   | 13.5± 0.6               | 1.78                                    | 133438+380626    | 14.97      | 0.370          | 0.793 | 0.445                                   | 0.230000      |
| 196       | 133439.5-234052 | 13:34:39.53 | -23:40:52.59 | 2.95     | 0.19±0.29         | -0.05±0.27        | --                    | --   | 0.2            | 1.5  | 0.52± 0.22              | 133438-234057   | 3.7± 0.5                | 2.58                                    | 133439-234052    | 15.30      | 0.463          | 1.065 | 2.239                                   | 0.008596      |
| 197       | 133446.6-341842 | 13:34:46.71 | -34:18:44.15 | 1.43     | -0.09±0.06        | -0.42±0.08        | 0.1                   | 1.8  | 0.2            | 2.7  | 0.23± 0.06              | 133446-341848   | 4.9± 0.5                | 2.02                                    | 133446-341844    | 12.44      | 0.558          | 0.741 | 1.172                                   | 0.013022      |
| 198       | 133742.3+275948 | 13:37:42.35 | +27:59:48.61 | 1.93     | -0.34±0.21        | -0.79±0.22        | 0.2                   | 0.70 | --             | --   | 0.10± 0.09              | 133742+275953   | 3.7± 0.5                | 1.68                                    | 133742+275948    | 14.09      | 0.441          | 0.546 | 2.633                                   | 0.063631      |
| 199       | 133917.8+280204 | 13:39:17.84 | +28:02: 4.95 | 2.11     | -0.08±0.30        | -0.23±0.39        | --                    | --   | 0.1            | 2.0  | 0.12± 0.11              | 133917+280209   | 2.8± 0.5                | 1.43                                    | 133917+280204    | 13.66      | 0.294          | 0.759 | 2.442                                   | 0.037034      |
| 200       | 134727.6-114040 | 13:47:27.67 | -11:40:40.80 | 0.63     | -0.42±0.07        | -0.82±0.10        | 0.2                   | 0.60 | --             | --   | 0.15± 0.02              | 134727-114043   | 5.1± 0.6                | 2.36                                    | 134727-114040    | 12.96      | 0.444          | 0.698 | 2.209                                   | --            |
| 201       | 135326.7+401659 | 13:53:26.76 | +40:16:59.32 | 0.34     | -0.46±0.03        | -0.68±0.04        | --                    | --   | 0.2            | 3.7  | 2.40± 0.13              | 135326+401658   | 40.5± 1.3               | 2.21                                    | 135326+401659    | 10.04      | 0.351          | 0.588 | 1.200                                   | --            |
| 202       | 140118.3+025950 | 14:01:18.32 | +02:59:50.33 | 2.08     | -0.08±0.26        | -0.39±0.36        | 0.01                  | 2.0  | 0.2            | 2.7  | 0.11± 0.06              | 140118+025953   | 3.1± 0.5                | 0.30                                    | 140118+025950    | 13.56      | 0.505          | 0.710 | 0.792                                   | --            |
| 203       | 140227.6+541952 | 14:02:27.68 | +54:19:52.50 | 3.94     | -0.88±0.12        | -1.00±0.84        | --                    | --   | --             | --   | 0.07± 0.05              | 140227+542000   | 3.6± 0.5                | 0.99                                    | --               | --         | --             | --    | --                                      | --            |
| 204       | 140341.1+541903 | 14:03:41.16 | +54:19: 3.88 | 0.70     | -0.48±0.03        | -0.84±0.05        | 0.1                   | 0.60 | --             | --   | 0.20± 0.01              | 140341+541905   | 24.6± 1.2               | 0.92                                    | 140341+541903    | 13.73      | 0.782          | 0.329 | 2.508                                   | --            |
| 205       | 140353.6+542157 | 14:03:54.14 | +54:21:49.29 | 6.76     | -0.41±0.03        | -0.61±0.04        | --                    | --   | 0.2            | 3.5  | 0.59± 0.04              | 140352+542152   | 21.5± 1.8               | 2.68                                    | --               | --         | --             | --    | --                                      | --            |
| 206       | 140429.1+542352 | 14:04:29.20 | +54:23:51.79 | 0.53     | -0.68±0.03        | -0.89±0.06        | --                    | --   | --             | --   | 0.48± 0.03              | 140429+542348   | 14.8± 0.9               | 2.57                                    | --               | --         | --             | --    | --                                      | --            |
| 207       | 140715.5-270928 | 14:07:15.54 | -27:09:28.87 | 0.15     | -0.11±0.02        | -0.48±0.02        | 0.1                   | 1.6  | 0.4            | 3.0  | 4.51± 0.16              | 140715-270929   | 101.4± 3.1              | 1.90                                    | 140715-270928    | 11.69      | 0.457          | 0.627 | 2.117                                   | 0.024210      |
| 208       | 141340.0+435159 | 14:13:40.07 | +43:51:59.04 | 1.76     | -0.52±0.19        | 0.34±0.27         | --                    | --   | --             | --   | 0.07± 0.05              | 141339+435158   | 3.6± 0.4                | 1.27                                    | 141340+435159    | 13.23      | 0.430          | 0.579 | 0.567                                   | 0.035000      |
| 209       | 141443.7-001651 | 14:14:43.78 | -00:16:51.01 | 3.34     | -0.30±0.16        | -0.08±0.17        | --                    | --   | --             | --   | 0.09± 0.08              | 141443-001702   | 2.1± 0.4                | 2.16                                    | 141443+001651    | 13.50      | 0.547          | 0.747 | 1.854                                   | --            |
| 210       | 141622.7+521916 | 14:16:22.80 | +52:19:16.86 | 0.27     | 0.12±0.03         | -0.34±0.03        | 0.2                   | 2.0  | 0.4            | 2.5  | 0.98± 0.06              | 141622+521916   | 76.9± 2.3               | 1.29                                    | --               | --         | --             | --    | --                                      | --            |
| 211       | 141628.5+522709 | 14:16:28.38 | +52:27: 7.13 | 2.23     | 0.02±0.10         | -0.15±0.12        | --                    | --   | 0.2            | 1.7  | 0.32± 0.09              | 141628+522709   | 118.5± 4.4              | 1.68                                    | --               | --         | --             | --    | --                                      | --            |
| 212       | 141935.7+064741 | 14:19:35.72 | +06:47:41.21 | 0.52     | -0.08±0.04        | -0.66±0.06        | 0.2                   | 0.90 | --             | --   | 1.12± 0.11              | 141935+064741   | 73.1± 2.6               | 1.27                                    | 141935+064741    | 14.25      | 0.391          | 0.675 | 2.782                                   | --            |
| 213       | 143525.2+002003 | 14:35:25.05 | +00:20: 3.89 | 1.86     | 0.08±0.17         | -0.27±0.22        | 0.2                   | 2.4  | 0.2            | 2.2  | 0.57± 0.34              | 143525+002007   | 10.9± 0.5               | 2.37                                    | 143525+002003    | 13.18      | 0.561          | 0.724 | 2.024                                   | 0.034467      |
| 214       | 144930.7-101032 | 14:49:30.80 | -10:10:32.72 | 0.62     | 0.06±0.09         | -0.27±0.09        | 0.1                   | 2.4  | 0.2            | 2.2  | 0.34± 0.06              | 144930-101020   | 16.1± 2.3               | 2.47                                    | --               | --         | --             | --    | --                                      | --            |
| 215       | 150121.1+013813 | 15:01:21.15 | +01:38:13.50 | 0.29     | 0.22±0.05         | -0.06±0.04        | --                    | --   | 0.2            | 1.7  | 1.88± 0.11              | 150121+013813   | 28.8± 1.0               | 2.62                                    | 150121+013813    | 11.79      | 0.598          | 0.728 | 0.428                                   | 0.035463      |
| 216       | 150422.1+474112 | 15:04:22.20 | +47:41:12.94 | 1.30     | -0.69±0.13        | -0.89±0.40        | --                    | --   | --             | --   | 0.10± 0.04              | 150422+474110   | 12.2± 0.9               | 1.12                                    | 150422+474112    | 13.08      | 0.464          | 0.939 | 0.640                                   | --            |
| 217       | 151550.1+562040 | 15:15:50.16 | +56:20:40.89 | 2.14     | 0.13±0.07         | -0.14±0.07        | --                    | --   | 0.2            | 1.7  | 1.45± 0.21              | 151549+562042   | 52.9± 2.8               | 1.74                                    | --               | --         | --             | --    | --                                      | --            |
| 218       | 153453.8+232828 | 15:34:53.71 | +23:28:27.56 | 1.94     | -0.20±0.03        | -0.62±0.04        | 0.1                   | 1.2  | 0.4            | 3.7  | 2.33± 0.19              | 153453+232821   | 4.4± 0.4                | 1.83                                    | --               | --         | --             | --    | --                                      | 0.088000      |
| 219       | 160534.5+323941 | 16:05:34.50 | +32:39:41.82 | 1.56     | 0.02±0.03         | -0.40±0.03        | 0.1                   | 1.8  | 0.4            | 2.7  | 1.00± 0.08              | 160534+323938   | 8.1± 0.5                | 2.32                                    | 160534+323941    | 14.65      | 0.412          | 0.591 | 1.158                                   | --            |
| 220       | 160536.7+174808 | 16:05:36.76 | +17:48: 7.93 | 0.98     | -0.31±0.08        | -0.49±0.11        | --                    | --   | 0.1            | 2.7  | 0.51± 0.09              | 160536+174804   | 4.2± 0.4                | 1.06                                    | 160536+174807    | 12.13      | 0.390          | 0.726 | 0.725                                   | 0.034170      |
| 221       | 160636.8+272500 | 16:06:36.86 | +27:25: 0.87 | 2.17     | -0.52±0.25        | -1.00±0.49        | --                    | --   | --             | --   | 0.41± 0.43              | 160637+272457   | 9.2± 0.5                | 1.80                                    | 160636+272500    | 13.26      | 0.664          | 0.813 | 1.252                                   | 0.121199      |
| 222       | 162806.3+780443 | 16:28: 6.40 | +78:04:43.34 | 2.77     | 0.69±0.25         | -0.11±0.27        | 0.8                   | 2.2  | 1.             | 2.5  | 0.27± 0.27              | 162807+780438   | 4.8± 0.5                | 1.37                                    | --               | --         | --             |       |   |               |



Table 4—Continued

| Src.<br># | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio<br>$\frac{M-S}{S+M}$ $\frac{H-M}{H+M}$ |            | Thermal – Non thermal |      |                |      | F <sub>x</sub><br>[cgs] | Name<br>NVSS J+ | F <sub>R</sub><br>[mJy] | R <sub>Xr</sub><br>f <sub>&lt;99%</sub> | Name<br>2MASS J+ | 2MASS Mag & Colors | R <sub>xi</sub><br>f <sub>&lt;99%</sub> | Redshift<br>z |       |       |
|-----------|-----------------|-------------|--------------|----------|---|------------|-----------------------|------|----------------|------|-------------------------|-----------------|-------------------------|---|------------------|--------------------|---|---------------|-------|-------|
|           |                 |             |              |          |   |            | N <sub>H</sub>        | KT   | N <sub>H</sub> | Γ    |                         |                 |                         |   |                  | K                  | H – K                                   | J – H         |       |       |
| 244       | 224231.0+293229 | 22:42:31.32 | +29:32:28.43 | 2.81     | -0.14±0.11  | -0.33±0.14 | 0.01                  | 2.2  | 0.2            | 2.2  | 0.11± 0.05              | 224231+293238   | 7.0± 0.4                | 2.86                                    | 224231+293228    | 13.2± 0.5          | 0.455                                   | 0.812         | 2.235 | —     |
| 245       | 224238.6+293020 | 22:42:38.65 | +29:30:20.83 | 1.02     | 0.26±0.10   | -0.54±0.12 | 0.4                   | 1.0  | 0.8            | 3.7  | 0.19± 0.08              | 224238+293023   | 13.4± 0.6               | 2.39                                    | 224238+293020    | 12.3± 0.5          | 0.380                                   | 0.860         | 0.178 | 0.024 |
| 246       | 225149.3-175224 | 22:51:49.33 | -17:52:24.27 | 0.67     | -0.42±0.08  | -0.44±0.13 | —                     | —    | 0.01           | 2.5  | 0.18± 0.03              | 225149-175225   | 5.9± 0.5                | 1.90                                    | 225149-175224    | 13.7± 0.5          | 0.620                                   | 0.782         | 1.133 | 0.080 |
| 247       | 225801.9-021945 | 22:58: 1.91 | -02:19:45.16 | 0.16     | 0.01±0.02   | -0.32±0.03 | 0.1                   | 2.2  | 0.4            | 2.5  | 45.74± 1.54             | 225801-021938   | 3.2± 0.6                | 2.46                                    | 225801-021945    | 13.0± 0.5          | 0.756                                   | 0.879         | 1.253 | —     |
| 248       | 232009.4+425800 | 23:20: 9.47 | +42:58: 0.72 | 1.89     | -0.38±0.22  | -0.32±0.38 | —                     | —    | —              | —    | 0.09± 0.07              | 232008+425800   | 4.2± 0.4                | 2.97                                    | 232009+425800    | 12.6± 0.5          | 0.462                                   | 0.816         | 0.987 | —     |
| 249       | 234402.0+003059 | 23:44: 2.05 | +00:30:59.50 | 0.45     | -0.15±0.05  | -0.61±0.07 | 0.1                   | 1.2  | 0.4            | 3.7  | 1.07± 0.16              | 234402+003059   | 36.2± 1.2               | 0.93                                    | 234402+003059    | 11.5± 0.5          | 0.581                                   | 0.688         | 0.825 | 0.022 |
| Seyfert I |                 |             |              |          |   |            |                       |      |                |      |                         |                 |                         |   |                  |                    |   |               |       |       |
| 1         | 000122.6-250020 | 00:01:22.67 | -25:00:20.01 | 0.44     | 0.17±0.07   | -0.32±0.07 | —                     | —    | 2.             | 2.5  | 3.50± 0.52              | 000122-250018   | 69.2± 2.1               | 1.71                                    | —                | —                  | —                                       | —             | —     | 0.964 |
| 2         | 000619.5+201210 | 00:06:19.51 | +20:12:10.10 | 0.01     | -0.10±0.00  | -0.48±0.00 | 0.1                   | 1.6  | 0.4            | 3.0  | 505.44± 0.55            | 000619+201210   | 7.3± 0.5                | 2.19                                    | 000619+201210    | 10.5± 0.5          | 1.139                                   | 0.884         | 1.623 | 0.025 |
| 3         | 003413.6-212618 | 00:34:13.67 | -21:26:18.57 | 0.13     | -0.09±0.02  | -0.39±0.02 | 0.01                  | 2.0  | 0.2            | 2.5  | 8.01± 0.22              | 003413-212616   | 42.6± 1.9               | 2.12                                    | 003413-212618    | 11.4± 0.5          | 0.743                                   | 0.669         | 1.360 | 0.026 |
| 4         | 004153.4+402117 | 00:41:53.45 | +40:21:17.58 | 0.13     | -0.18±0.02  | -0.57±0.02 | 0.1                   | 1.2  | 0.4            | 3.5  | 14.29± 0.36             | 004153+402116   | 16.4± 0.6               | 0.93                                    | 004153+402117    | 12.5± 0.5          | 0.826                                   | 0.617         | 0.816 | 0.071 |
| 5         | 012531.4+320811 | 01:25:31.41 | +32:08:11.35 | 0.08     | 0.24±0.01   | -0.28±0.01 | 0.2                   | 2.2  | 0.4            | 2.5  | 21.66± 0.34             | 012531+320806   | 5.4± 0.5                | 3.00                                    | 012531+320811    | 11.6± 0.5          | 0.271                                   | 0.672         | 2.678 | 0.015 |
| 6         | 015950.2+002341 | 01:59:50.23 | +00:23:41.23 | 0.10     | -0.12±0.01  | -0.47±0.02 | 0.1                   | 1.8  | 0.4            | 3.0  | 28.23± 0.50             | 015950+002338   | 26.2± 0.9               | 2.77                                    | 015950+002341    | 12.0± 0.5          | 1.074                                   | 0.978         | 1.464 | 0.162 |
| 7         | 020014.9+312546 | 02:00:14.90 | +31:25:46.45 | 0.35     | -0.35±0.01  | -0.82±0.01 | 0.2                   | 0.60 | —              | —    | 21.53± 0.32             | 020014+312545   | 7.0± 0.5                | 0.72                                    | 020014+312546    | 10.4± 0.5          | 0.284                                   | 0.798         | 1.123 | 0.016 |
| 8         | 021433.5-004600 | 02:14:33.58 | -00:46: 0.23 | 0.02     | 0.18±0.00   | -0.30±0.00 | 0.2                   | 2.2  | 0.4            | 2.5  | 129.44± 0.56            | 021433-004600   | 16.2± 0.6               | 2.27                                    | 021433+004600    | 10.5± 0.5          | 1.070                                   | 0.769         | 0.505 | 0.026 |
| 9         | 023005.4-085953 | 02:30: 5.47 | -08:59:53.45 | 0.09     | -0.16±0.01  | -0.47±0.01 | 0.01                  | 1.6  | 0.2            | 3.0  | 238.41± 3.47            | 023005-085944   | 2.4± 0.5                | 1.71                                    | 023005-085953    | 10.8± 0.5          | 0.779                                   | 0.851         | 0.701 | 0.016 |
| 10        | 031948.1+413042 | 03:19:48.16 | +41:30:42.40 | 0.02     | 0.26±0.00   | -0.20±0.00 | 0.2                   | 2.4  | 0.4            | 2.2  | 165.02± 0.63            | 031948+413042   | 2829.2± 684.9           | 0.42                                    | 031948+413042    | 11.2± 0.5          | 0.679                                   | 0.791         | 0.742 | 0.017 |
| 11        | 032511.5-061051 | 03:25:11.55 | -06:10:51.41 | 0.96     | -0.30±0.10  | -0.61±0.14 | 0.                    | 1.2  | 0.2            | 3.5  | 0.71± 0.17              | 032511-061050   | 24.8± 0.9               | 2.08                                    | 032511-061051    | 12.6± 0.5          | 0.554                                   | 0.714         | 0.289 | 0.033 |
| 12        | 032525.3-060838 | 03:25:25.37 | -06:08:38.39 | 0.11     | 0.06±0.01   | -0.33±0.01 | 0.2                   | 2.0  | 0.4            | 2.5  | 26.88± 0.51             | 032525-060837   | 30.2± 1.0               | 2.56                                    | 032525-060838    | 11.5± 0.5          | 0.569                                   | 0.750         | 1.058 | 0.034 |
| 13        | 033210.9-274415 | 03:32:10.97 | -27:44:14.85 | 0.57     | -0.00±0.03  | -0.36±0.03 | —                     | —    | 2.             | 2.5  | 0.18± 0.01              | 033211-274414   | 3.6± 0.6                | 2.98                                    | —                | —                  | —                                       | —             | —     | 1.615 |
| 14        | 033336.3-360825 | 03:33:36.42 | -36:08:26.26 | 0.05     | -0.21±0.00  | 0.39±0.00  | —                     | —    | —              | —    | 109.01± 0.35            | 033336-360825   | 375.9± 13.0             | 1.43                                    | 033336-360826    | 9.22± 0.5          | 1.011                                   | 1.104         | 1.988 | 0.005 |
| 15        | 043308.9+053511 | 04:33: 9.00 | +05:35:12.92 | 2.42     | 0.28±0.06   | -0.39±0.07 | 0.4                   | 1.6  | 0.6            | 3.0  | 0.86± 0.16              | 043309+053521   | 6.4± 0.5                | 2.55                                    | —                | —                  | —                                       | —             | —     | 0.033 |
| 16        | 043400.0-083444 | 04:34: 0.06 | -08:34:44.35 | 0.14     | 0.12±0.02   | -0.38±0.02 | 0.2                   | 2.0  | 0.6            | 2.7  | 5.44± 0.17              | 043400-083445   | 137.1± 4.9              | 1.94                                    | 043400-083444    | 10.3± 0.5          | 0.665                                   | 0.865         | 2.168 | 0.155 |
| 17        | 044115.8+085035 | 04:41:15.83 | +08:50:35.11 | 2.43     | 0.90±0.23   | -0.08±0.26 | 2.                    | 1.4  | 2.             | 3.5  | 0.79± 0.65              | 044115+085034   | 32.2± 1.0               | 1.10                                    | —                | —                  | —                                       | —             | —     | 0.083 |
| 18        | 045112.2-035453 | 04:51:12.28 | -03:54:52.69 | 0.63     | 0.23±0.07   | -0.20±0.07 | 0.2                   | 2.6  | 0.4            | 2.2  | 3.19± 0.40              | 045112-035452   | 106.1± 3.2              | 0.64                                    | —                | —                  | —                                       | —             | —     | 0.013 |
| 19        | 051556.9+460534 | 05:15:56.94 | +46:05:34.85 | 1.83     | 0.91±0.23   | -0.35±0.21 | 2.                    | 0.80 | —              | —    | 0.19± 0.12              | 051556+460534   | 3.5± 0.5                | 0.13                                    | —                | —                  | —                                       | —             | —     | 0.033 |
| 20        | 053904.7-284325 | 05:39: 4.71 | -28:43:25.01 | 1.27     | 0.21±0.16   | -0.42±0.17 | —                     | —    | 4.             | 3.0  | 0.10± 0.06              | 053904-284329   | 3.0± 0.5                | 1.09                                    | —                | —                  | —                                       | —             | —     | 1.650 |
| 21        | 055426.0+200640 | 05:54:26.05 | +20:06:40.92 | 3.41     | 1.00±0.79   | -0.02±0.52 | 8.                    | 0.30 | —              | —    | 4.38± 2.98              | 055425+200639   | 39.0± 1.6               | 1.66                                    | 055426+200640    | 11.5± 0.5          | 0.157                                   | 0.462         | 1.640 | 0.020 |
| 22        | 055741.6+535946 | 05:57:41.64 | +53:59:46.62 | 1.28     | 0.77±0.16   | -0.29±0.17 | 1.                    | 1.2  | 2.             | 3.7  | 0.78± 0.21              | 055741+535946   | 8.5± 0.5                | 1.50                                    | —                | —                  | —                                       | —             | —     | 0.033 |
| 23        | 065046.5+250259 | 06:50:46.59 | +25:02:59.64 | 0.09     | 0.12±0.01   | -0.55±0.01 | 0.2                   | 1.2  | 0.6            | 3.7  | 165.96± 2.56            | 065046+250259   | 96.2± 2.9               | 2.15                                    | 065046+250259    | 12.2± 0.5          | 0.625                                   | 0.670         | 1.288 | 0.018 |
| 24        | 083759.7+483608 | 08:37:59.63 | +48:36: 6.36 | 2.94     | -0.14±0.20  | -0.43±0.29 | 0.01                  | 1.8  | 0.2            | 2.7  | 0.14± 0.07              | 083759+483607   | 48.9± 1.8               | 0.43                                    | —                | —                  | —                                       | —             | —     | 0.028 |
| 25        | 084132.3+704757 | 08:41:32.34 | +70:47:57.81 | 0.50     | -0.21±0.07  | -0.21±0.09 | —                     | —    | 0.             | 1.7  | 0.81± 0.11              | 084132+704757   | 96.5± 3.9               | 1.74                                    | 084132+704757    | 15.0± 0.5          | 0.881                                   | 0.632         | 1.554 | 0.010 |
| 26        | 091345.5+405629 | 09:13:45.52 | +40:56:29.03 | 0.16     | 0.10±0.01   | -0.36±0.01 | —                     | —    | 0.8            | 2.5  | 37.26± 0.53             | 091345+405630   | 15.9± 0.9               | 2.86                                    | 091345+405629    | 14.7± 0.5          | 1.097                                   | 0.955         | 2.410 | 0.442 |
| 27        | 091826.0+161819 | 09:18:26.02 | +16:18:19.94 | 0.06     | 0.25±0.01   | 0.17±0.01  | —                     | —    | 0.1            | 0.75 | 147.16± 1.50            | 091826+161821   | 6.1± 0.5                | 1.14                                    | 091826+161819    | 10.7± 0.5          | 1.028                                   | 0.983         | 1.086 | 0.029 |
| 28        | 094541.9-141934 | 09:45:41.97 | -14:19:34.58 | 0.01     | 0.69±0.00   | -0.05±0.00 | 0.8                   | 2.4  | 1.             | 2.2  | 1084.17± 2.08           | 094542-141934   | 226.2± 6.8              | 1.23                                    | 094541-141934    | 10.4± 0.5          | 0.797                                   | 0.886         | 1.021 | 0.007 |
| 29        | 095219.1-013643 | 09:52:19.14 | -01:36:44.00 | 0.24     | -0.47±0.03  | -0.42±0.05 | —                     | —    | —              | —    | 21.83± 1.25             | 095219-013643   | 62.2± 1.9               | 1.14                                    | 095219-013643    | 9.72± 0.5          | 1.217                                   | 1.250         | 1.526 | 0.019 |
| 30        | 102330.5+195153 | 10:23:30.58 | +19:51:53.87 | 0.04     | 0.20±0.01   | 0.45±0.01  | —                     | —    | —              | —    | 110.88± 0.61            | 102330+195154   | 97.5± 3.5               | 1.69                                    | 102330+195153    | 9.92± 0.5          | 0.605                                   | 0.737         | 1.194 | 0.003 |
| 31        | 103352.6+004403 | 10:33:52.61 | +00:44: 3.81 | 0.46     | 0.09±0.16   | 0.71±0.06  | —                     | —    | —              | —    | 7.26± 0.44              | 103352+004403   | 19.2± 1.0               | 0.41                                    | 103352+004403    | 13.2± 0.5          | 0.978                                   | 1.094         | 0.561 | 0.130 |
| 32        | 103438.6+393828 | 10:34:38.60 | +39:38:28.65 | 0.04     | -0.52±0.01  | -0.63±0.01 | —                     | —    | 0.1            | 3.5  | 96.16± 0.54             | 103438+393827   | 25.4± 0.9               | 1.42                                    | 103438+393828    | 12.6± 0.5          | 0.769                                   | 0.705         | 1.429 | 0.043 |
| 33        | 105144.3+353930 | 10:51:44.36 | +35:39:30.76 | 0.17.    |   |            |                       |      |                |      |                         |                 |                         |   |                  |                    |   |               |       |       |



Table 4—Continued

| Src.<br>#  | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio<br>$\frac{M-S}{S+M}$<br>$\frac{H-M}{H+M}$ |            | Thermal – Non thermal |     |      |     | F <sub>x</sub><br>[cgs] | Name<br>NVSS J+ | F <sub>r</sub><br>[mJy] | R <sub>xr</sub><br>f <sub>&lt;99%</sub> | Name<br>2MASS J+ | 2MASS<br>K | SS Mag & Colors<br>H – K    J – H |       | R <sub>xi</sub><br>f <sub>&lt;99%</sub> | Redshift<br>z |
|------------|-----------------|-------------|--------------|----------|--|------------|-----------------------|-----|------|-----|-------------------------|-----------------|-------------------------|---|------------------|------------|-----------------------------------|-------|---|---------------|
| 55         | 151159.8-211901 | 15:11:59.82 | -21:19: 1.74 | 0.04     | 0.39±0.01  | -0.24±0.01 | 0.4                   | 2.2 | 0.6  | 2.5 | 143.98± 1.21            | 151159-211900   | 46.9± 1.5               | 2.35                                    | 151159-211901    | 10.97      | 0.936                             | 0.872 | 0.983                                   | 0.04437       |
| 56         | 153159.1+242047 | 15:31:59.11 | +24:20:47.14 | 0.14     | 0.02±0.02  | -0.39±0.02 | 0.2                   | 2.6 | 0.8  | 2.7 | 17.16± 0.57             | 153159+242045   | 9.4± 0.5                | 1.09                                    | 153159+242047    | 14.60      | 0.437                             | 0.389 | 0.348                                   | 0.63100       |
| 57         | 153228.8+045358 | 15:32:28.82 | +04:53:58.28 | 0.11     | 0.05±0.01  | -0.38±0.01 | 0.2                   | 2.2 | 0.4  | 2.7 | 23.40± 0.57             | 153228+045358   | 11.9± 0.5               | 2.17                                    | 153228+045358    | 14.50      | 0.937                             | 0.792 | 0.752                                   | 0.21900       |
| 58         | 154948.9+212537 | 15:49:48.94 | +21:25:37.08 | 1.41     | 0.12±0.25  | -0.11±0.24 | --                    | --  | 0.8  | 1.7 | 0.09± 0.03              | 154948+212539   | 2522.0± 75.7            | 1.33                                    | --               | --         | --                                | --    | 1.20614                                 |               |
| 59         | 170330.2+454047 | 17:03:30.29 | +45:40:46.99 | 0.03     | 0.12±0.00  | -0.45±0.00 | 0.2                   | 1.6 | 0.4  | 3.0 | 182.43± 0.88            | 170330+454047   | 121.4± 3.7              | 0.67                                    | 170330+454046    | 11.68      | 0.905                             | 0.985 | 1.022                                   | 0.06069       |
| 60         | 172320.8+341758 | 17:23:20.86 | +34:17:58.36 | 0.09     | 0.15±0.01  | -0.32±0.01 | 0.2                   | 2.4 | 0.6  | 2.5 | 188.33± 2.04            | 172320+341757   | 518.3± 19.7             | 0.92                                    | 172320+341758    | 12.88      | 0.933                             | 0.597 | 0.892                                   | 0.20599       |
| 61         | 213202.1-334254 | 21:32: 2.17 | -33:42:54.09 | 0.03     | 0.21±0.00  | -0.25±0.00 | 0.2                   | 2.4 | 0.4  | 2.2 | 134.29± 0.87            | 213202-334318   | 3.2± 0.7                | 2.42                                    | 213202-334254    | 12.00      | 0.865                             | 0.745 | 1.477                                   | 0.02972       |
| 62         | 215151.0-194605 | 21:51:51.05 | -19:46: 5.12 | 0.14     | 0.18±0.02  | -0.10±0.02 | --                    | --  | 0.6  | 1.7 | 9.28± 0.30              | 215151-194606   | 1971.6± 59.2            | 2.16                                    | 215151-194605    | 14.93      | 0.854                             | 1.032 | 1.665                                   | 0.42400       |
| 63         | 222113.5-280420 | 22:21:13.60 | -28:04:20.75 | 0.50     | -0.08±0.06   | -0.35±0.07 | --                    | --  | 0.4  | 2.5 | 2.73± 0.37              | 222113-280420   | 70.8± 2.2               | 1.02                                    | 222113-280420    | 15.44      | 0.540                             | 0.823 | 0.171                                   | 0.33000       |
| 64         | 223656.0-221315 | 22:36:56.04 | -22:13:15.00 | 0.06     | 0.02±0.01  | -0.34±0.01 | 0.1                   | 2.0 | 0.4  | 2.5 | 107.78± 1.03            | 223656-221316   | 6.8± 0.5                | 0.84                                    | --               | --         | --                                | --    | 0.03325                                 |               |
| 65         | 224016.9+080312 | 22:40:16.96 | +08:03:12.85 | 0.05     | 0.07±0.01  | -0.36±0.01 | 0.2                   | 2.0 | 0.4  | 2.5 | 174.00± 1.87            | 224017+080315   | 15.1± 0.6               | 1.80                                    | 224016+080312    | 11.54      | 0.691                             | 0.733 | 1.646                                   | 0.02500       |
| 66         | 224239.3+294331 | 22:42:39.38 | +29:43:32.87 | 0.02     | -0.12±0.00   | -0.56±0.00 | 0.1                   | 1.2 | 0.4  | 3.5 | 721.16± 0.77            | 224239+294333   | 28.6± 0.9               | 0.68                                    | 224239+294332    | 11.44      | 0.940                             | 0.867 | 1.722                                   | 0.02491       |
| Seyfert II |                 |             |              |          |  |            |                       |     |      |     |                         |                 |                         |   |                  |            |                                   |       |   |               |
| 1          | 001106.5-120626 | 00:11: 6.55 | -12:06:26.43 | 0.29     | -0.17±0.04   | -0.26±0.04 | --                    | --  | 0.1  | 2.0 | 4.53± 0.21              | 001106-120627   | 66.9± 2.5               | 1.32                                    | 001106-120626    | 10.68      | 0.658                             | 0.964 | 2.665                                   | 0.01998       |
| 2          | 004847.1+315724 | 00:48:47.11 | +31:57:24.29 | 0.21     | 0.13±0.12  | 0.88±0.02  | --                    | --  | --   | --  | 326.33± 7.77            | 004847+315725   | 292.2± 8.8              | 0.99                                    | 004847+315724    | 11.54      | 0.758                             | 0.650 | 0.932                                   | 0.01514       |
| 3          | 005621.6+003235 | 00:56:21.68 | +00:32:35.41 | 1.76     | -0.45±0.25   | -0.05±0.39 | --                    | --  | --   | --  | 0.08± 0.05              | 005621+003232   | 9.0± 0.5                | 2.12                                    | --               | --         | --                                | --    | 0.48400                                 |               |
| 4          | 010730.4+141222 | 01:07:30.46 | +14:12:22.11 | 0.98     | 0.52±0.11  | -0.18±0.11 | 0.6                   | 2.2 | 0.8  | 2.5 | 0.32± 0.07              | 010730+141221   | 4.9± 0.4                | 1.87                                    | 010730+141222    | 13.70      | 0.423                             | 0.684 | 0.198                                   | 0.07800       |
| 5          | 011607.1+330522 | 01:16: 7.17 | +33:05:22.18 | 0.23     | -0.20±0.03   | -0.62±0.04 | 0.1                   | 1.2 | 0.4  | 3.7 | 2.32± 0.14              | 011607+330521   | 75.4± 2.3               | 1.70                                    | 011607+330522    | 12.59      | 0.492                             | 0.700 | 1.871                                   | 0.01604       |
| 6          | 013331.1+354006 | 01:33:31.19 | +35:40: 6.40 | 0.24     | -0.38±0.03   | -0.45±0.05 | --                    | --  | 0.01 | 2.5 | 3.93± 0.21              | 013331+354005   | 32.8± 1.1               | 1.24                                    | 013331+354006    | 11.86      | 0.372                             | 0.721 | 2.060                                   | 0.01512       |
| 7          | 014357.7+022059 | 01:43:57.73 | +02:20:59.92 | 0.13     | -0.49±0.02   | -0.62±0.03 | --                    | --  | 0.1  | 3.2 | 8.02± 0.23              | 014357+022059   | 24.0± 1.1               | 1.57                                    | 014357+022059    | 11.45      | 0.570                             | 0.809 | 1.854                                   | 0.01728       |
| 8          | 014430.6+170610 | 01:44:30.61 | +17:06:10.52 | 2.74     | -0.18±0.30   | -1.00±0.70 | --                    | --  | --   | --  | 0.14± 0.12              | 014430+170608   | 40.1± 1.3               | 0.90                                    | 014430+170610    | 12.30      | 0.374                             | 0.804 | 0.690                                   | 0.02771       |
| 9          | 015002.6-072548 | 01:50: 2.67 | -07:25:48.38 | 0.11     | 0.55±0.02  | -0.25±0.02 | 0.6                   | 1.8 | 0.8  | 2.7 | 13.33± 0.33             | 015002-072549   | 318.2± 9.6              | 1.26                                    | 015002-072548    | 12.67      | 0.590                             | 0.663 | 0.940                                   | 0.01771       |
| 10         | 024104.7-081520 | 02:41: 4.78 | -08:15:20.97 | 0.09     | 0.04±0.01  | 0.29±0.01  | --                    | --  | --   | --  | 56.86± 0.33             | 024104-081521   | 912.5± 27.4             | 0.31                                    | 024104-081520    | 9.811      | 0.593                             | 0.601 | 0.268                                   | 0.00493       |
| 11         | 025512.1-001100 | 02:55:12.18 | -00:11: 0.44 | 0.15     | -0.26±0.04   | 0.15±0.04  | --                    | --  | --   | --  | 40.72± 0.74             | 025512-001058   | 154.6± 5.4              | 2.56                                    | 025512+001100    | 11.73      | 0.694                             | 0.742 | 1.681                                   | 0.02884       |
| 12         | 025958.5+364914 | 02:59:58.59 | +36:49:14.72 | 0.21     | -0.00±0.03   | -0.54±0.03 | 0.2                   | 1.2 | 0.4  | 3.5 | 5.59± 0.24              | 025958+364913   | 100.4± 3.0              | 1.30                                    | 025958+364914    | 10.72      | 0.237                             | 0.896 | 2.444                                   | 0.01208       |
| 13         | 033040.9-030815 | 03:30:40.91 | -03:08:15.42 | 0.28     | -0.39±0.04   | -0.56±0.06 | --                    | --  | 0.1  | 3.0 | 5.35± 0.27              | 033040-030816   | 12.0± 0.6               | 0.63                                    | 033040-030815    | 11.91      | 0.552                             | 0.633 | 1.429                                   | 0.02050       |
| 14         | 033339.6-050522 | 03:33:39.67 | -05:05:22.39 | 0.37     | -0.34±0.04   | -0.48±0.06 | --                    | --  | 0.1  | 2.7 | 4.22± 0.23              | 033339-050522   | 19.6± 0.7               | 2.18                                    | 033339-050522    | 11.36      | 0.469                             | 0.594 | 0.656                                   | 0.01344       |
| 15         | 034110.6-011756 | 03:41:10.90 | -01:17:56.53 | 3.59     | -0.20±0.07   | -0.65±0.09 | 0.1                   | 1.0 | 0.4  | 3.7 | 1.46± 0.17              | 034110-011753   | 15.2± 0.6               | 0.71                                    | 034110-011756    | 12.34      | 0.478                             | 0.828 | 0.751                                   | 0.02532       |
| 16         | 044830.4-203213 | 04:48:30.58 | -20:32:17.21 | 4.56     | 0.08±0.11  | -0.16±0.12 | --                    | --  | 0.2  | 2.0 | 0.48± 0.11              | 044830-203221   | 275.5± 10.5             | 1.33                                    | 044830-203217    | 13.25      | 0.456                             | 0.707 | 0.808                                   | 0.01520       |
| 17         | 051938.3-324920 | 05:19:38.37 | -32:49:20.18 | 2.62     | -0.41±0.27   | -0.00±0.42 | --                    | --  | --   | --  | 0.15± 0.12              | 051938-324916   | 4.4± 0.5                | 1.60                                    | --               | --         | --                                | --    | 0.04347                                 |               |
| 18         | 055155.1-071612 | 05:51:55.14 | -07:16:12.15 | 2.37     | -0.17±0.82   | 0.81±0.32  | --                    | --  | --   | --  | 0.61± 0.25              | 055154-071557   | 9.2± 1.5                | 2.13                                    | --               | --         | --                                | --    | 0.00757                                 |               |
| 19         | 061534.7+224146 | 06:15:34.72 | +22:41:45.71 | 1.29     | 0.52±0.11  | 0.07±0.07  | --                    | --  | 0.4  | 1.5 | 2.94± 0.29              | 061534+224145   | 566.4± 17.0             | 0.20                                    | --               | --         | --                                | --    | 0.01343                                 |               |
| 20         | 064659.4+821506 | 06:46:59.63 | +82:15: 7.17 | 0.55     | 0.32±0.04  | -0.26±0.04 | 0.4                   | 2.0 | 0.6  | 2.5 | 1.24± 0.12              | 064659+821506   | 314.5± 11.1             | 0.94                                    | --               | --         | --                                | --    | 0.00615                                 |               |
| 21         | 081919.5+705507 | 08:19:19.25 | +70:55: 6.27 | 3.43     | -0.07±0.06   | -0.47±0.12 | 0.1                   | 1.6 | 0.4  | 3.0 | 1.04± 0.26              | 081918+705504   | 23.5± 0.8               | 1.14                                    | 081919+705506    | 14.85      | 0.924                             | 0.547 | 1.370                                   | 0.01830       |
| 22         | 094740.1-305655 | 09:47:40.19 | -30:56:56.17 | 0.00     | 0.87±0.00  | 0.21±0.00  | --                    | --  | 2.   | 2.0 | 1032.60± 0.83           | 094740-305657   | 14.3± 0.6               | 1.32                                    | 094740-305656    | 10.34      | 0.905                             | 0.837 | 1.609                                   | 0.00822       |
| 23         | 101738.5+214119 | 10:17:38.58 | +21:41:19.42 | 0.55     | -0.21±0.08   | -0.34±0.11 | --                    | --  | 0.1  | 2.2 | 0.87± 0.11              | 101738+214116   | 5.3± 0.5                | 2.58                                    | 101738+214119    | 11.58      | 0.317                             | 0.742 | 2.822                                   | 0.04123       |
| 24         | 102651.8-032754 | 10:26:51.90 | -03:27:54.03 | 0.71     | -0.24±0.11   | -0.30±0.15 | --                    | --  | 0.01 | 2.0 | 3.31± 0.43              | 102651-032753   | 6.7± 0.5                | 0.28                                    | 102651-032754    | 13.07      | 0.448                             | 0.610 | 1.439                                   | 0.03452       |
| 25         | 102924.9+292356 | 10:29:24.93 | +29:23:56.74 | 0.55     | 0.20±0.08  | -0.31±0.09 | 0.2                   | 2.0 | 0.4  | 2.5 | 0.78± 0.12              | 102924+292357   | 15.5± 0.6               | 2.49                                    | --               | --         | --                                | --    | --                                      |               |
| 26         | 103408.5+600152 | 10:34: 8.56 | +60:01:52.65 | 0.28     | -0.39±0.04   | -0.40±0.06 | --                    | --  | 0.01 | 2.5 | 3.19± 0.19              | 103408+600153   | 19.1± 0.7               | 1.71                                    | 103408+600152    | 12.65      | 0.627                             | 0.814 | 1.244                                   | 0.05260       |
| 27         | 103506.8+562846 | 10:35: 6.89 | +56:28:46.86 | 0.87     | 0.43±0.14  | 0.09±0.13  | --                    | --  | 0.6  | 1.2 | 1.09± 0.21              | 103507+562847   | 1801.9± 54.1            | 1.33                                    | --               | --         | --                                | --    | 0.45970                                 |               |
| 28         | 103951.5+643005 | 10:39:51.55 | +64:30: 5.55 | 1.70     | 0.25±0.17  | -0.41±0.20 | 0.6                   | 2.2 | 1.   | 3.0 | 0.19± 0.08              | 103951+642959   | 3.9± 0.4                | 2.45                                    | --               | --         | --                                | --    | 0.40180                                 |               |
| 29         | 110023.6+285835 | 11:00:23:2  |              |          |  |            |                       |     |      |     |                         |                 |                         |   |                  |            |                                   |       |   |               |



Table 4—Continued

| Src.<br># | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio    |                   | Thermal – Non thermal |      |                |      | F <sub>x</sub><br>[cgs] | Name<br>NVSS J+ | F <sub>r</sub><br>[mJy] | R <sub>xr</sub><br>f <sub>&lt;99%</sub> | Name<br>2MASS J+ | 2MASS Mag & Colors |       |       | R <sub>xi</sub><br>f <sub>&lt;99%</sub> | Redshift<br>z |       |
|-----------|-----------------|-------------|--------------|----------|-------------------|-------------------|-----------------------|------|----------------|------|-------------------------|-----------------|-------------------------|---|------------------|--------------------|-------|-------|---|---------------|-------|
|           |                 |             |              |          | $\frac{M-S}{S+M}$ | $\frac{H-M}{H+M}$ | N <sub>H</sub>        | KT   | N <sub>H</sub> | Γ    |                         |                 |                         |   |                  | K                  | H – K | J – H |   |               |       |
| 49        | 134915.2+601126 | 13:49:15.28 | +60:11:26.17 | 0.23     | -0.58±0.02        | -0.41±0.05        | --                    | --   | --             | --   | 1.53± 0.08              | 134915+601126   | 78.4± 2.8               | 0.50                                    | 134915+601126    | 9.91               | 0.491 | 0.673 | 1.206                                   | 0.006         |       |
| 50        | 135602.7+182218 | 13:56: 2.79 | +18:22:18.05 | 0.14     | -0.30±0.02        | -0.23±0.03        | --                    | --   | --             | --   | 9.75± 0.23              | 135602+182219   | 380.5± 11.4             | 2.86                                    | --               | --                 | --    | --    | --                                      | 0.050         |       |
| 51        | 140028.6+621038 | 14:00:28.68 | +62:10:38.15 | 0.74     | 0.81±0.12         | 0.27±0.09         | --                    | --   | 2.             | 1.2  | 4.11± 0.62              | 140028+621038   | 4307.6± 129.2           | 0.52                                    | --               | --                 | --    | --    | --                                      | 0.431         |       |
| 52        | 141314.9-031227 | 14:13:14.89 | -03:12:27.62 | 0.02     | 0.81±0.00         | 0.54±0.00         | --                    | --   | 0.6            | 0.25 | 905.95± 1.33            | 141314-031227   | 338.8± 10.2             | 2.33                                    | 141314-031227    | 9.03               | 1.397 | 1.638 | 0.516                                   | 0.006         |       |
| 53        | 141721.0+265127 | 14:17:21.04 | +26:51:27.04 | 0.49     | -0.40±0.04        | -0.63±0.06        | --                    | --   | 0.2            | 3.5  | 0.73± 0.05              | 141721+265128   | 22.6± 0.8               | 1.75                                    | 141721+265127    | 11.54              | 0.365 | 0.875 | 1.353                                   | 0.036         |       |
| 54        | 143445.5-325031 | 14:34:45.51 | -32:50:31.55 | 0.77     | -0.21±0.10        | -0.82±0.11        | 0.4                   | 0.60 | --             | --   | 0.18± 0.05              | 143445-325030   | 8.2± 0.5                | 2.92                                    | 143445-325031    | 12.83              | 0.474 | 0.652 | 1.399                                   | 0.025         |       |
| 55        | 144314.3+770727 | 14:43:14.33 | +77:07:27.72 | 0.55     | -0.33±0.08        | -0.53±0.13        | --                    | --   | 0.2            | 3.0  | 0.32± 0.05              | 144314+770726   | 1880.4± 66.2            | 1.71                                    | 144314+770727    | 15.6               | 0.259 | 0.729 | 1.453                                   | 0.267         |       |
| 56        | 151555.1-200917 | 15:15:55.18 | -20:09:17.05 | 1.07     | -0.41±0.15        | -0.17±0.24        | --                    | --   | --             | --   | 0.22± 0.07              | 151555-200916   | 9.6± 0.6                | 0.76                                    | 151555-200917    | 13.13              | 1.249 | 1.132 | 0.127                                   | 0.109         |       |
| 57        | 151644.5+070119 | 15:16:44.56 | +07:01:18.48 | 0.74     | 0.15±0.00         | -0.53±0.00        | 0.4                   | 1.2  | 0.6            | 3.5  | 301.26± 1.83            | 151644+070118   | 5499.3± 209.1           | 0.33                                    | 151644+070118    | 13.03              | 0.525 | 0.783 | 1.095                                   | 0.034         |       |
| 58        | 153229.7+300749 | 15:32:29.74 | +30:07:49.64 | 1.57     | -0.33±0.20        | 0.00±0.26         | --                    | --   | --             | --   | 0.51± 0.25              | 153229+300748   | 8.9± 0.5                | 0.46                                    | 153229+300749    | 13.13              | 0.651 | 0.710 | 0.507                                   | 0.064         |       |
| 59        | 153244.0+324248 | 15:32:44.00 | +32:42:48.38 | 1.25     | 0.31±0.15         | -0.58±0.15        | 2.                    | 1.8  | --             | --   | 0.42± 0.12              | 153243+324246   | 8.1± 0.5                | 1.75                                    | --               | --                 | --    | --    | --                                      | 0.925         |       |
| 60        | 153457.3+233011 | 15:34:57.21 | +23:30:10.12 | 1.50     | -0.06±0.03        | -0.40±0.03        | 0.1                   | 1.8  | 0.4            | 2.7  | 2.10± 0.09              | 153457+233011   | 326.3± 9.8              | 0.63                                    | 153457+233010    | 11.43              | 0.879 | 1.216 | 0.753                                   | 0.018         |       |
| 61        | 153547.7+732703 | 15:35:47.75 | +73:27: 3.27 | 0.20     | -0.46±0.02        | -0.69±0.04        | --                    | --   | 0.2            | 3.7  | 2.48± 0.11              | 153547+732702   | 40.2± 1.3               | 2.07                                    | 153547+732703    | 12.06              | 0.481 | 0.621 | 1.630                                   | 0.024         |       |
| 62        | 155041.6-035318 | 15:50:41.55 | -03:53:17.79 | 1.23     | -0.20±0.08        | -0.36±0.10        | --                    | --   | 0.2            | 2.5  | 5.93± 0.58              | 155041-035317   | 41.6± 1.3               | 0.88                                    | 155041-035317    | 11.97              | 0.696 | 0.796 | 0.541                                   | 0.030         |       |
| 63        | 180007.1+663654 | 18:00: 7.19 | +66:36:54.04 | 0.72     | -0.33±0.05        | -0.03±0.07        | --                    | --   | --             | --   | 8.19± 0.43              | 180007+663654   | 31.7± 1.0               | 0.63                                    | 180007+663654    | 11.93              | 0.495 | 0.852 | 0.502                                   | 0.026         |       |
| 64        | 200751.2-110834 | 20:07:51.28 | -11:08:34.49 | 0.08     | 0.07±0.01         | -0.36±0.01        | 0.2                   | 2.0  | 0.4            | 2.7  | 28.11± 0.35             | 200751-110835   | 8.1± 0.5                | 0.74                                    | 200751-110834    | 12.49              | 0.608 | 0.931 | 0.217                                   | 0.032         |       |
| 65        | 203714.0+660619 | 20:37:14.10 | +66:06:19.53 | 0.85     | 0.09±0.10         | -0.63±0.11        | 0.4                   | 0.90 | --             | --   | 1.15± 0.25              | 203713+660619   | 68.1± 2.7               | 0.92                                    | 203714+660619    | 10.40              | 0.433 | 1.034 | 0.498                                   | 0.004         |       |
| 66        | 204446.2-103842 | 20:44:46.25 | -10:38:42.57 | 13.93    | -0.02±0.25        | 0.25±0.34         | --                    | --   | --             | --   | 5.69± 3.09              | 204446-103842   | 279.0± 9.9              | 0.53                                    | 204446-103842    | 14.03              | 0.041 | 0.326 | 2.074                                   | 0.690         |       |
| 67        | 220702.0+101401 | 22:07: 2.02 | +10:14: 1.09 | 0.20     | -0.12±0.03        | -0.13±0.04        | --                    | --   | 0.             | 1.5  | 9.63± 0.33              | 220702+101402   | 114.1± 3.4              | 2.41                                    | 220702+101401    | 12.23              | 0.447 | 0.654 | 1.165                                   | 0.026         |       |
| 68        | 224937.0-191627 | 22:49:37.09 | -19:16:27.22 | 0.49     | -0.74±0.07        | 0.49±0.12         | --                    | --   | --             | --   | 12.00± 1.02             | 224937-191625   | 12.5± 0.6               | 0.97                                    | 224937-191627    | 10.93              | 1.022 | 1.027 | 1.130                                   | 0.031         |       |
| 69        | 230456.6+121921 | 23:04:56.69 | +12:19:21.79 | 0.58     | -0.43±0.09        | -0.53±0.15        | --                    | --   | 0.1            | 3.0  | 3.45± 0.27              | 230456+121920   | 99.0± 3.7               | 1.72                                    | 230456+121921    | 11.43              | 0.508 | 0.782 | 1.408                                   | 0.007         |       |
| 70        | 232846.7+033041 | 23:28:46.70 | +03:30:41.29 | 0.12     | 0.04±0.02         | -0.32±0.02        | 0.1                   | 2.2  | 0.4            | 2.5  | 12.76± 0.36             | 232846+033041   | 55.8± 1.7               | 1.36                                    | 232846+033041    | 11.33              | 0.731 | 0.521 | 1.835                                   | 0.017         |       |
| 71        | 232903.9+033159 | 23:29: 3.94 | +03:31:59.57 | 0.36     | -0.09±0.06        | -0.11±0.07        | --                    | --   | --             | 0.01 | 1.5                     | 3.69± 0.21      | 232903+033159           | 59.8± 1.8                               | 0.74             | 232903+033159      | 12.23 | 0.651 | 0.599                                   | 1.550         | 0.017 |
| 72        | 234421.0+095602 | 23:44:21.08 | +09:56: 2.28 | 0.56     | -0.11±0.06        | -0.55±0.08        | 0.1                   | 1.4  | 0.4            | 3.2  | 1.00± 0.11              | 234421+095606   | 7.2± 0.5                | 1.99                                    | 234421+095602    | 10.73              | 0.374 | 0.450 | 1.747                                   | 0.005         |       |
| 73        | 235113.9+201346 | 23:51:13.91 | +20:13:46.18 | 0.15     | 0.40±0.02         | -0.27±0.02        | 0.4                   | 2.0  | 0.6            | 2.7  | 6.74± 0.22              | 235113+201349   | 5.8± 0.4                | 2.61                                    | 235113+201346    | 12.33              | 0.680 | 0.896 | 1.158                                   | 0.043         |       |
| 74        | 235509.4+495008 | 23:55: 9.45 | +49:50: 8.04 | 0.64     | 0.12±0.12         | 0.32±0.09         | --                    | --   | --             | --   | 1.11± 0.12              | 235509+495008   | 2305.9± 69.2            | 0.93                                    | 235509+495008    | 15.1               | 0.750 | 0.745 | 0.839                                   | 0.237         |       |
| Liners    |                 |             |              |          |                   |                   |                       |      |                |      |                         |                 |                         |   |                  |                    |       |       |   |               |       |
| 1         | 002126.4-083925 | 00:21:26.49 | -08:39:25.74 | 0.69     | -0.06±0.09        | -0.45±0.11        | 0.1                   | 1.8  | 0.4            | 3.0  | 0.15± 0.03              | 002126-083927   | 15.7± 0.6               | 1.70                                    | 002126-083925    | 13.4               | 0.931 | 0.905 | 0.751                                   | 0.138         |       |
| 2         | 012002.4+142142 | 01:20: 2.46 | +14:21:42.87 | 0.85     | -0.12±0.10        | -0.37±0.13        | 0.01                  | 2.0  | 0.2            | 2.5  | 1.22± 0.27              | 012002+142142   | 49.8± 1.5               | 1.92                                    | --               | --                 | --    | --    | --                                      | 0.031         |       |
| 3         | 083354.0-230211 | 08:33:54.07 | -23:02:11.56 | 1.32     | 0.47±0.15         | -0.14±0.17        | --                    | --   | 0.8            | 2.2  | 0.19± 0.08              | 083354-230212   | 19.5± 0.7               | 0.64                                    | --               | --                 | --    | --    | --                                      | 0.242         |       |
| 4         | 085537.7+781324 | 08:55:37.76 | +78:13:24.78 | 0.27     | -0.37±0.03        | -0.38±0.05        | --                    | --   | 0.             | 2.2  | 16.77± 0.74             | 085538+781324   | 123.2± 3.7              | 1.40                                    | 085537+781324    | 9.39               | 0.153 | 0.830 | 1.114                                   | 0.004         |       |
| 5         | 091805.8-120540 | 09:18: 5.78 | -12:05:40.87 | 0.11     | 0.16±0.00         | -0.41±0.00        | 0.2                   | 1.6  | 0.6            | 3.0  | 431.57± 1.52            | 091805-120541   | 849.9± 1278.8           | 0.61                                    | --               | --                 | --    | --    | --                                      | 0.054         |       |
| 6         | 091918.6+691211 | 09:19:18.63 | +69:12:11.21 | 0.23     | 0.05±0.02         | -0.31±0.02        | 0.1                   | 2.2  | 0.4            | 2.5  | 2.50± 0.09              | 091918+691208   | 10.9± 0.5               | 2.11                                    | 091918+691211    | 9.34               | 0.309 | 0.964 | 0.875                                   | 0.002         |       |
| 7         | 095533.1+690355 | 09:55:33.20 | +69:03:55.47 | 0.06     | 0.16±0.00         | -0.34±0.00        | 0.2                   | 2.0  | 0.4            | 2.7  | 302.83± 1.36            | 095533+690355   | 86.0± 2.6               | 1.42                                    | 095533+690355    | 8.43               | 0.527 | 0.681 | 1.278                                   | --            |       |
| 8         | 103702.5-273354 | 10:37: 2.52 | -27:33:54.25 | 0.19     | -0.34±0.04        | 0.20±0.04         | --                    | --   | --             | --   | 6.13± 0.19              | 103702-273352   | 49.0± 2.2               | 1.96                                    | 103702-273354    | 10.97              | 0.463 | 0.769 | 0.613                                   | 0.009         |       |
| 9         | 105223.5+440846 | 10:52:23.56 | +44:08:45.19 | 1.22     | -0.04±0.14        | -0.48±0.15        | 0.1                   | 1.6  | 0.4            | 3.0  | 0.15± 0.05              | 105223+440845   | 21.2± 0.8               | 0.13                                    | 105223+440845    | 13.47              | 0.841 | 1.164 | 1.506                                   | 0.092         |       |
| 10        | 105918.1+243234 | 10:59:18.12 | +24:32:34.30 | 0.28     | -0.05±0.04        | -0.40±0.04        | 0.1                   | 1.8  | 0.4            | 2.7  | 0.94± 0.06              | 105918+243235   | 57.0± 2.1               | 2.75                                    | 105918+243234    | 11.63              | 0.683 | 0.926 | 0.762                                   | 0.042         |       |
| 11        | 113234.8+530404 | 11:32:34.89 | +53:04: 4.50 | 0.19     | 0.76±0.01         | 0.04±0.01         | --                    | --   | 1.             | 2.0  | 24.62± 0.54             | 113234+530403   | 14.9± 0.9               | 0.49                                    | 113234+530404    | 10.46              | 0.563 | 0.601 | 0.915                                   | 0.003         |       |
| 12        | 115756.1+552714 | 11:57:56.12 | +55:27:14.05 | 0.03     | 0.06±0.00         | -0.33±0.00        | 0.2                   | 2.0  | 0.4            | 2.5  | 213.46± 1.33            | 115756+552712   | 98.4± 3.0               | 2.14                                    | --               | --                 | --    | --    | --                                      | 0.003         |       |
| 13        | 122006.8+291651 | 12:20: 6.80 | +29:16:51.22 | 0.04     | 0.01±0.00         | -0.39±0.01        | 0.1                   | 1.8  | 0.4            | 2.7  | 44.45± 0.32             | 122006+291650   | 385.0± 11.6             | 1.35                                    | 122006+291651    | 10.0               |       |       |   |               |       |



Table 4—Continued

| Src.<br>#           | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio    |                   | Thermal – Non thermal |      |                |      | F <sub>x</sub><br>[cgs] | Name<br>NVSS J+ | F <sub>r</sub><br>[mJy] | R <sub>xr</sub><br>f <sub>&lt;99%</sub> | Name<br>2MASS J+ | 2MASS Mag & Colors |       |       | R <sub>xi</sub><br>f <sub>&lt;99%</sub> | Redshift<br>z |
|---------------------|-----------------|-------------|--------------|----------|-------------------|-------------------|-----------------------|------|----------------|------|-------------------------|-----------------|-------------------------|---|------------------|--------------------|-------|-------|---|---------------|
|                     |                 |             |              |          | $\frac{M-S}{S+M}$ | $\frac{H-M}{H+M}$ | N <sub>H</sub>        | KT   | N <sub>H</sub> | Γ    |                         |                 |                         |   |                  | K                  | H – K | J – H |   |               |
| 12                  | 073412.1+313841 | 07:34:11.77 | +31:38:43.30 | 1.97     | 0.56±0.12         | -0.20±0.12        | --                    | --   | 8.             | 2.5  | 1.42± 0.37              | 073411+313842   | 310.4± 9.3              | 0.18                                    | --               | --                 | --    | --    | 2.42900                                 |               |
| 13                  | 073844.8+653746 | 07:38:44.85 | +65:37:46.24 | 0.39     | 0.27±0.05         | -0.28±0.05        | --                    | --   | 2.             | 2.5  | 0.91± 0.11              | 073844+653745   | 51.9± 1.6               | 1.25                                    | --               | --                 | --    | --    | 0.99400                                 |               |
| 14                  | 080813.8-361432 | 08:08:13.89 | -36:14:32.24 | 1.43     | 0.90±0.14         | 0.21±0.16         | --                    | --   | 4.             | 2.2  | 1.30± 0.44              | 080813-361432   | 144.7± 4.4              | 0.47                                    | --               | --                 | --    | --    | 0.36830                                 |               |
| 15                  | 082350.7+403843 | 08:23:50.75 | +40:38:43.41 | 0.71     | -0.05±0.10        | -0.41±0.12        | --                    | --   | 2.             | 2.7  | 1.49± 0.33              | 082350+403842   | 12.7± 0.9               | 2.80                                    | --               | --                 | --    | --    | 1.61000                                 |               |
| 16                  | 085810.0+275052 | 08:58:10.03 | +27:50:52.11 | 0.42     | 0.06±0.05         | -0.05±0.05        | --                    | --   | 0.6            | 1.5  | 0.76± 0.04              | 085810+275050   | 1807.8± 63.4            | 1.89                                    | --               | --                 | --    | --    | 1.16900                                 |               |
| 17                  | 090053.8+385616 | 09:00:53.82 | +38:56:16.01 | 0.42     | 0.48±0.15         | 0.76±0.05         | --                    | --   | --             | --   | 6.57± 0.44              | 090053+385616   | 509.1± 17.4             | 2.11                                    | --               | --                 | --    | --    | 0.22900                                 |               |
| 18                  | 101145.4+462820 | 10:11:45.49 | +46:28:20.76 | 1.10     | -0.13±0.16        | -0.24±0.21        | --                    | --   | 1.             | 2.0  | 0.20± 0.06              | 101145+462820   | 1557.2± 46.7            | 0.58                                    | --               | --                 | --    | --    | 1.79000                                 |               |
| 19                  | 101345.2-000713 | 10:13:45.21 | -00:07:13.26 | 2.19     | 0.26±0.03         | -0.44±0.04        | 0.4                   | 1.4  | 0.6            | 3.2  | 16.13± 1.47             | 101345-000719   | 4.0± 0.5                | 2.68                                    | 101345+00-713    | 13.25              | 0.556 | 0.624 | 2.192                                   | 0.09510       |
| 20                  | 104420.3-011146 | 10:44:20.33 | -01:11:46.11 | 0.98     | -0.10±0.11        | -0.17±0.14        | --                    | --   | 0.2            | 1.7  | 0.45± 0.12              | 104420-011146   | 275.5± 8.3              | 0.61                                    | --               | --                 | --    | --    | 0.46200                                 |               |
| 21                  | 112443.7+384547 | 11:24:43.74 | +38:45:47.01 | 0.44     | -0.49±0.01        | -0.46±0.03        | --                    | --   | --             | --   | 4.25± 0.15              | 112443+384546   | 112.2± 3.7              | 1.32                                    | 112443+384547    | 10.61              | 0.290 | 0.514 | 2.780                                   | 0.00682       |
| 22                  | 120846.7+433754 | 12:08:46.71 | +43:37:54.60 | 1.86     | 0.62±0.25         | -0.42±0.34        | 0.8                   | 1.2  | 1.             | 4.0  | 0.56± 0.22              | 120847+433752   | 41.1± 1.3               | 2.11                                    | --               | --                 | --    | --    | --                                      |               |
| 23                  | 123222.3+000039 | 12:32:22.34 | +00:00:39.84 | 1.51     | -0.10±0.21        | -0.00±0.24        | --                    | --   | --             | --   | 0.04± 0.02              | 123222+000046   | 4.1± 0.4                | 1.72                                    | --               | --                 | --    | --    | 0.04490                                 |               |
| 24                  | 123429.7+393037 | 12:34:29.71 | +39:30:37.15 | 0.50     | 0.23±0.10         | 0.36±0.07         | --                    | --   | --             | --   | 1.33± 0.13              | 123429+393038   | 154.0± 5.5              | 1.56                                    | --               | --                 | --    | --    | 0.63200                                 |               |
| 25                  | 123504.8+392538 | 12:35: 4.86 | +39:25:38.67 | 1.52     | -0.32±0.22        | 0.32±0.19         | --                    | --   | --             | --   | 0.03± 0.02              | 123504+392540   | 255.3± 7.7              | 1.61                                    | --               | --                 | --    | --    | 3.22000                                 |               |
| 26                  | 124733.2+672316 | 12:47:33.25 | +67:23:16.36 | 0.99     | 0.17±0.18         | 0.18±0.15         | --                    | --   | 0.01           | 0.75 | 0.16± 0.03              | 124733+672316   | 263.4± 7.9              | 0.49                                    | 124733+672316    | 13.73              | 0.485 | 0.606 | 0.209                                   | 0.10730       |
| 27                  | 125749.0-171624 | 12:57:49.09 | -17:16:24.24 | 0.56     | -0.02±0.02        | -0.64±0.02        | 0.2                   | 1.0  | 0.6            | 4.0  | 11.72± 0.49             | 125749-171622   | 75.8± 2.3               | 2.96                                    | --               | --                 | --    | --    | 0.04934                                 |               |
| 28                  | 125922.2+275438 | 12:59:22.26 | +27:54:38.19 | 20.87    | -0.47±0.14        | -1.00±0.29        | --                    | --   | --             | --   | 1.91± 2.27              | 125921+275438   | 248.2± 8.0              | 0.46                                    | 125922+275438    | 12.20              | 0.393 | 0.410 | 0.708                                   | 0.02260       |
| 29                  | 125935.6+275733 | 12:59:35.59 | +27:57:31.35 | 1.96     | -0.05±0.02        | -0.48±0.02        | 0.1                   | 1.6  | 0.4            | 3.0  | 0.52± 0.03              | 125935+275736   | 205.9± 7.1              | 2.60                                    | --               | --                 | --    | --    | 0.02402                                 |               |
| 30                  | 130240.6+672840 | 13:02:40.62 | +67:28:40.79 | 2.03     | 0.07±0.05         | -0.61±0.06        | 0.4                   | 1.2  | 0.8            | 3.7  | 2.09± 0.43              | 130240+672841   | 340.5± 12.0             | 0.57                                    | 130240+672840    | 13.58              | 0.523 | 0.744 | 0.768                                   | 0.10581       |
| 31                  | 130919.0-013720 | 13:09:19.04 | -01:37:20.52 | 0.66     | 0.13±0.02         | -0.41±0.02        | 0.2                   | 1.8  | 0.4            | 3.0  | 25.94± 0.71             | 130919-013720   | 9.8± 0.5                | 2.61                                    | 130919-013720    | 13.18              | 0.733 | 0.672 | 1.574                                   | 0.08350       |
| 32                  | 131929.9-010841 | 13:19:29.98 | -01:08:41.66 | 1.52     | 0.17±0.21         | -0.30±0.23        | 0.2                   | 2.4  | 0.6            | 2.5  | 0.16± 0.08              | 131929-010842   | 12.3± 1.0               | 0.18                                    | 131929-010841    | 13.86              | 0.580 | 0.711 | 1.632                                   | 0.14000       |
| 33                  | 135055.7+642857 | 13:50:55.71 | +64:28:57.35 | 0.18     | 0.25±0.03         | -0.34±0.03        | 0.2                   | 1.8  | 0.6            | 2.7  | 2.68± 0.11              | 135055+642857   | 183.0± 5.5              | 0.66                                    | --               | --                 | --    | --    | --                                      |               |
| 34                  | 140729.8-270104 | 14:07:29.81 | -27:01: 4.43 | 0.21     | -0.22±0.02        | -0.66±0.03        | 0.1                   | 1.0  | 0.4            | 4.0  | 3.51± 0.10              | 140729-270104   | 645.5± 22.8             | 0.65                                    | 140729-270104    | 11.74              | 0.525 | 0.601 | 1.666                                   | 0.02211       |
| 35                  | 143637.2+631914 | 14:36:37.22 | +63:19:14.14 | 1.42     | -0.03±0.24        | 0.15±0.24         | --                    | --   | --             | --   | 0.05± 0.02              | 143637+631912   | 497.3± 14.9             | 0.99                                    | --               | --                 | --    | --    | 4.26100                                 |               |
| 36                  | 144712.7+404744 | 14:47:12.79 | +40:47:44.66 | 0.92     | 0.06±0.12         | -0.33±0.14        | 0.2                   | 2.4  | 0.4            | 2.5  | 0.85± 0.33              | 144712+404745   | 409.1± 12.3             | 1.28                                    | 144712+404744    | 14.80              | 0.496 | 1.090 | 0.782                                   | 0.18000       |
| 37                  | 145431.4+183831 | 14:54:31.50 | +18:38:31.91 | 0.16     | 0.13±0.00         | -0.55±0.00        | 0.4                   | 1.2  | 0.6            | 3.5  | 90.91± 0.53             | 145431+183832   | 39.0± 1.2               | 2.22                                    | 145431+183831    | 13.42              | 0.430 | 0.598 | 1.624                                   | 0.05920       |
| 38                  | 162528.0+823454 | 16:25:28.00 | +82:34:54.80 | 1.15     | 0.25±0.12         | -0.29±0.14        | 0.2                   | 2.0  | 0.4            | 2.5  | 1.50± 0.51              | 162527+823457   | 45.6± 1.8               | 1.95                                    | --               | --                 | --    | --    | --                                      |               |
| 39                  | 171329.0+640249 | 17:13:29.14 | +64:02:49.61 | 1.20     | 0.16±0.14         | -0.24±0.15        | 0.2                   | 2.4  | 0.4            | 2.2  | 0.34± 0.09              | 171329+640250   | 265.7± 9.1              | 1.01                                    | 171329+640249    | 13.27              | 0.453 | 0.667 | 0.705                                   | 0.07833       |
| 40                  | 171415.0+434103 | 17:14:14.81 | +43:41: 2.66 | 2.29     | -0.31±0.04        | -0.82±0.05        | 0.2                   | 0.60 | --             | --   | 5.87± 0.78              | 171414+434111   | 5.8± 0.5                | 2.46                                    | 171414+434102    | 11.27              | 0.187 | 0.894 | 1.200                                   | 0.02781       |
| 41                  | 221942.6-275627 | 22:19:42.62 | -27:56:27.19 | 0.95     | 0.06±0.16         | 0.00±0.15         | --                    | --   | 0.2            | 1.2  | 0.43± 0.10              | 221942-275626   | 2023.6± 60.7            | 1.10                                    | --               | --                 | --    | --    | 0.65700                                 |               |
| 42                  | 232535.3-115935 | 23:25:35.35 | -11:59:36.29 | 2.72     | -0.05±0.06        | -0.45±0.08        | 0.1                   | 1.6  | 0.4            | 3.0  | 0.71± 0.15              | 232535-115935   | 46.3± 1.8               | 2.64                                    | 232535-115936    | 15.24              | 0.804 | 1.302 | 0.579                                   | 0.08200       |
| Double galaxies     |                 |             |              |          |                   |                   |                       |      |                |      |                         |                 |                         |   |                  |                    |       |       |   |               |
| 1                   | 011944.9+032434 | 01:19:44.99 | +03:24:34.89 | 1.24     | -0.23±0.10        | -0.40±0.13        | --                    | --   | 0.2            | 2.5  | 0.60± 0.11              | 011944+032434   | 44.8± 2.0               | 1.63                                    | 011944+032434    | 11.14              | 0.735 | 0.830 | 1.870                                   | 0.00795       |
| 2                   | 022402.5-044137 | 02:24: 2.67 | -04:41:35.77 | 2.89     | -0.22±0.13        | -0.02±0.16        | --                    | --   | --             | --   | 0.91± 0.23              | 022402-044129   | 4.7± 0.6                | 2.55                                    | 022402-044135    | 13.33              | 0.361 | 0.743 | 0.220                                   | 0.04300       |
| 3                   | 091443.4+405253 | 09:14:43.49 | +40:52:53.20 | 1.86     | 0.49±0.19         | -0.95±0.11        | 2.                    | 0.20 | --             | --   | 0.21± 0.16              | 091443+405300   | 2.9± 0.5                | 0.72                                    | --               | --                 | --    | --    | 0.00831                                 |               |
| 4                   | 094548.3-142205 | 09:45:48.36 | -14:22: 5.21 | 0.17     | -0.17±0.02        | -0.26±0.02        | --                    | --   | 0.1            | 2.0  | 4.60± 0.15              | 094548-142204   | 74.1± 2.7               | 1.67                                    | 094548-142205    | 12.40              | 0.424 | 0.573 | 2.116                                   | 0.00810       |
| 5                   | 102142.6+130654 | 10:21:42.68 | +13:06:54.34 | 0.82     | -0.13±0.12        | -0.29±0.14        | 0.01                  | 2.4  | 0.2            | 2.2  | 0.31± 0.06              | 102142+130654   | 16.8± 0.6               | 0.91                                    | 102142+130654    | 13.18              | 0.618 | 0.914 | 1.718                                   | 0.07660       |
| 6                   | 113944.3+315547 | 11:39:44.38 | +31:55:47.77 | 2.44     | 0.30±0.28         | -0.46±0.30        | 0.4                   | 1.4  | 0.6            | 3.2  | 0.27± 0.22              | 113944+315556   | 17.3± 1.1               | 2.88                                    | 113944+315547    | 11.88              | 0.292 | 0.927 | 2.184                                   | 0.00850       |
| 7                   | 121345.9+024839 | 12:13:45.98 | +02:48:39.78 | 0.61     | -0.12±0.07        | -0.35±0.09        | 0.01                  | 2.2  | 0.2            | 2.5  | 0.29± 0.05              | 121345+024840   | 23.3± 0.8               | 1.33                                    | 121345+024839    | 13.48              | 0.903 | 1.006 | 0.478                                   | 0.07268       |
| 8                   | 122142.7+143548 | 12:21:42.74 | +14:35:48.63 | 2.08     | -0.48±0.05        | -0.41±0.12        | --                    | --   | --             | --   | 0.44± 0.07              | 122142+143544   | 34.8± 2.3               | 2.79                                    | --               | --                 | --    | --    | 0.00388                                 |               |
| 9                   | 124240.8+141751 | 12:42:40.89 | +14:17:51.35 | 1.89     | -0.53±0.06        | -0.43±0.14        | --                    | --   | --             | --   | 0.51± 0.11              | 124240+141746   | 33.0± 1.7               | 2.56                                    | --               | --                 | --    | --    | 0.00060                                 |               |
| 10                  | 134222.3+353728 | 13:42:22.37 | +35:37:28.19 | 2.18     | 0.05±0.22         | -0.70±0.25        | 0.4                   | 0.80 | --             | --   | 0.10± 0.06              | 134222+353727   | 5.6± 0.5                | 1.07                                    | 134222+353728    | 13.61              | 0.157 | 0.540 | 2.202                                   | 0.01825       |
| 11                  | 160523.0+174532 | 16:05:23.06 | +17:45:32.81 | 2.73     | 0.90±0.23         | 0.09±0.31         | 2.                    | 2.0  | 2.             | 2.7  | 0.44± 0.41              | 160523+174515   | 2.8± 0.5                | 1.88                                    | 160523+174532    | 13.49              | 0.422 | 0.695 | 2.848                                   | 0.03200       |
| Cluster of galaxies |                 |             |              |          |                   |                   |                       |      |                |      |                         |                 |                         |   |                  |                    |       |       |   |               |
| 1                   | 000013.5-251107 | 00:00:13.51 | -25:11: 7.46 | 2.93</   |                   |                   |                       |      |                |      |                         |                 |                         |   |                  |                    |       |       |   |               |



Table 4—Continued

| Src.<br># | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio    |                   | Thermal – Non thermal |      |                |     | F <sub>X</sub><br>[cgs] | Name<br>NVSS J+ | F <sub>r</sub><br>[mJy] | R <sub>XR</sub><br>f <sub>&lt;99%</sub> | Name<br>2MASS J+ | 2MA<br>K | SS Mag & Colors |       | R <sub>xi</sub><br>f <sub>&lt;99%</sub> | Redshift<br>z |
|-----------|-----------------|-------------|--------------|----------|-------------------|-------------------|-----------------------|------|----------------|-----|-------------------------|-----------------|-------------------------|---|------------------|----------|-----------------|-------|---|---------------|
|           |                 |             |              |          | $\frac{M-S}{S+M}$ | $\frac{H-M}{H+M}$ | N <sub>H</sub>        | KT   | N <sub>H</sub> | Γ   |                         |                 |                         |   |                  |          | H – K           | J – H |   |               |
| 18        | 004230.3-092203 | 00:42:30.39 | -09:22: 3.40 | 1.59     | 0.58±0.30         | 0.04±0.29         | --                    | --   | 0.6            | 1.7 | 0.34± 0.18              | 004230-092204   | 105.4± 3.2              | 0.36                                    | -- -- -- --      | --       | --              | --    | --                                      | --            |
| 19        | 004301.6-094723 | 00:43: 1.61 | -09:47:23.71 | 2.13     | -0.67±0.24        | -0.20±0.39        | --                    | --   | --             | --  | 0.10± 0.10              | 004301-094721   | 5.1± 0.5                | 0.88                                    | 004301-094723    | 14.35    | 0.560           | 0.737 | 0.852                                   | 0.12975       |
| 20        | 005619.2-013012 | 00:56:19.22 | -01:30:12.73 | 2.14     | 0.08±0.34         | 0.08±0.34         | --                    | --   | 0.01           | 1.0 | 0.10± 0.08              | 005619-013010   | 5.8± 0.5                | 1.35                                    | -- -- -- --      | --       | --              | --    | --                                      | --            |
| 21        | 011058.8+330907 | 01:10:58.93 | +33:09: 6.91 | 0.11     | -0.42±0.01        | -0.83±0.01        | 0.2                   | 0.60 | --             | --  | 6.90± 0.08              | 011058+330905   | 5.8± 0.5                | 0.40                                    | 011058+330906    | 10.82    | 0.599           | 0.608 | 1.346                                   | 0.01761       |
| 22        | 012239.3+342616 | 01:22:39.36 | +34:26:16.24 | 2.84     | -0.59±0.28        | -1.00±0.97        | --                    | --   | --             | --  | 0.60± 0.35              | 012238+342611   | 7.3± 0.4                | 2.66                                    | 012239+342616    | 11.98    | 0.447           | 0.837 | 2.026                                   | 0.01618       |
| 23        | 012531.4+014533 | 01:25:31.46 | +01:45:34.13 | 0.14     | -0.25±0.01        | -0.83±0.01        | 0.2                   | 0.60 | --             | --  | 15.09± 0.11             | 012531+014534   | 28.6± 1.0               | 0.53                                    | 012531+014534    | 11.76    | 0.704           | 0.497 | 2.783                                   | 0.01844       |
| 24        | 012604.6+014509 | 01:26: 4.66 | +01:45: 9.63 | 1.16     | 0.14±0.16         | -0.16±0.22        | --                    | --   | 0.2            | 2.0 | 0.22± 0.06              | 012604+014510   | 3.0± 0.5                | 1.21                                    | 012604+014509    | 13.79    | 0.502           | 0.653 | 0.954                                   | 0.06103       |
| 25        | 012654.3+191253 | 01:26:54.34 | +19:12:53.30 | 0.92     | -0.21±0.09        | -0.72±0.12        | 0.2                   | 0.80 | --             | --  | 0.85± 0.18              | 012654+191252   | 1408.1± 45.2            | 1.03                                    | 012654+191253    | 12.38    | 0.485           | 0.521 | 1.189                                   | 0.04309       |
| 26        | 015253.9+360310 | 01:52:53.99 | +36:03:10.24 | 2.14     | -0.40±0.08        | -0.44±0.14        | --                    | --   | 0.01           | 2.5 | 0.98± 0.17              | 015254+360312   | 34.8± 1.7               | 1.66                                    | -- -- -- --      | --       | --              | --    | --                                      | 0.02042       |
| 27        | 020752.9+021002 | 02:07:52.92 | +02:10: 2.72 | 3.17     | -0.23±0.25        | -0.45±0.37        | --                    | --   | 0.2            | 2.7 | 0.08± 0.12              | 020752+020956   | 3.6± 0.6                | 2.58                                    | 020752+021002    | 11.71    | 0.572           | 0.750 | 0.834                                   | 0.02333       |
| 28        | 024055.2+083539 | 02:40:55.30 | +08:35:39.60 | 1.93     | -0.22±0.23        | -0.89±0.20        | 0.4                   | 0.50 | --             | --  | 0.06± 0.05              | 024055+083544   | 6.3± 0.5                | 1.39                                    | 024055+083539    | 13.69    | 0.591           | 0.565 | 2.796                                   | 0.01827       |
| 29        | 024106.2+084414 | 02:41: 6.24 | +08:44:14.55 | 0.51     | -0.25±0.03        | -0.54±0.04        | 0.                    | 1.4  | 0.2            | 3.2 | 1.36± 0.09              | 024106+084414   | 228.1± 7.4              | 1.92                                    | -- -- -- --      | --       | --              | --    | --                                      | 0.01962       |
| 30        | 025918.8+132133 | 02:59:18.87 | +13:21:33.88 | 2.84     | -0.07±0.37        | 0.39±0.28         | --                    | --   | --             | --  | 1.08± 0.38              | 025918+132129   | 18.1± 0.7               | 1.51                                    | -- -- -- --      | --       | --              | --    | --                                      | --            |
| 31        | 031642.9+411929 | 03:16:42.93 | +41:19:29.61 | 0.04     | 0.04±0.01         | -0.49±0.01        | 0.2                   | 1.4  | 0.4            | 3.2 | 35.51± 0.28             | 031642+411928   | 168.1± 5.9              | 1.51                                    | 031642+411929    | 10.98    | 0.347           | 0.888 | 1.742                                   | 0.01890       |
| 32        | 042607.3+165513 | 04:26: 7.33 | +16:55:13.11 | 0.51     | 0.41±0.02         | -0.31±0.02        | 0.8                   | 2.6  | 1.             | 2.7 | 8.93± 0.34              | 042607+165514   | 328.8± 9.9              | 1.76                                    | -- -- -- --      | --       | --              | --    | --                                      | 0.38000       |
| 33        | 043420.3-082918 | 04:34:20.30 | -08:29:18.16 | 6.83     | 0.00±0.11         | -0.45±0.15        | 0.1                   | 1.6  | 0.4            | 3.0 | 1.61± 0.51              | 043421-082912   | 110.4± 4.3              | 2.26                                    | 043420-082918    | 14.42    | 0.924           | 0.734 | 1.919                                   | -- --         |
| 34        | 044906.9-061736 | 04:49: 6.91 | -06:17:36.34 | 1.78     | -0.00±0.24        | -0.12±0.26        | --                    | --   | 0.1            | 1.7 | 0.30± 0.12              | 044907-061736   | 17.5± 0.7               | 1.96                                    | -- -- -- --      | --       | --              | --    | --                                      | --            |
| 35        | 045400.6-030832 | 04:54: 0.62 | -03:08:32.23 | 2.61     | -0.03±0.06        | -0.44±0.09        | 0.1                   | 2.0  | 0.4            | 3.0 | 1.95± 0.41              | 045400-030835   | 47.5± 1.8               | 1.30                                    | 045400-030832    | 14.90    | 0.971           | 0.526 | 0.812                                   | 0.23421       |
| 36        | 063528.3+052608 | 06:35:28.38 | +05:26: 8.91 | 2.30     | -0.35±0.57        | 0.81±0.32         | --                    | --   | --             | --  | 1.14± 0.41              | 063528+052607   | 81.7± 2.5               | 0.71                                    | -- -- -- --      | --       | --              | --    | --                                      | --            |
| 37        | 072153.2+712036 | 07:21:53.14 | +71:20:36.34 | 0.27     | -0.07±0.00        | -0.50±0.00        | 0.1                   | 1.4  | 0.4            | 3.2 | 146.59± 0.59            | 072153+712036   | 726.6± 21.8             | 0.35                                    | 072153+712036    | 10.43    | 0.766           | 0.744 | 1.333                                   | -- --         |
| 38        | 082733.7+263715 | 08:27:33.74 | +26:37:15.10 | 0.28     | 0.16±0.04         | -0.34±0.04        | 0.2                   | 2.2  | 0.6            | 2.5 | 2.85± 0.24              | 082733+263716   | 101.9± 3.1              | 1.96                                    | -- -- -- --      | --       | --              | --    | --                                      | 0.20100       |
| 39        | 084124.3+705342 | 08:41:24.39 | +70:53:42.99 | 0.02     | 0.14±0.00         | -0.18±0.00        | --                    | --   | 0.4            | 2.0 | 545.01± 1.69            | 084124+705341   | 3823.1± 114.7           | 2.48                                    | 084124+705342    | 14.10    | 0.684           | 0.729 | 2.827                                   | 0.24020       |
| 40        | 095557.3-095904 | 09:55:57.37 | -09:59: 4.10 | 0.11     | 0.07±0.00         | -0.43±0.00        | 0.2                   | 1.8  | 0.6            | 3.0 | 38.05± 0.27             | 095557-095902   | 20.5± 0.7               | 2.58                                    | -- -- -- --      | --       | --              | --    | --                                      | 0.16000       |
| 41        | 100236.5+324224 | 10:02:36.59 | +32:42:24.71 | 1.01     | -0.02±0.10        | -0.82±0.10        | 0.4                   | 0.60 | --             | --  | 0.58± 0.18              | 100236+324226   | 10.0± 0.5               | 0.78                                    | 100236+324224    | 12.18    | 0.304           | 0.724 | 0.695                                   | 0.04990       |
| 42        | 103635.4-273059 | 10:36:35.46 | -27:30:59.97 | 3.17     | 0.21±0.05         | -0.29±0.05        | 0.2                   | 2.2  | 0.4            | 2.5 | 15.78± 1.14             | 103635-273104   | 62.8± 2.7               | 2.57                                    | 103635-273059    | 11.31    | 0.420           | 0.834 | 2.071                                   | 0.01357       |
| 43        | 103712.7-274103 | 10:37:12.73 | -27:41: 3.29 | 1.43     | -0.34±0.08        | -0.26±0.12        | --                    | --   | --             | --  | 1.16± 0.23              | 103712-274103   | 26.4± 1.2               | 0.83                                    | 103712-274103    | 13.31    | 0.373           | 0.900 | 1.111                                   | 0.00932       |
| 44        | 103749.6-270716 | 10:37:49.61 | -27:07:16.61 | 0.29     | 0.05±0.04         | -0.28±0.04        | 0.1                   | 2.4  | 0.2            | 2.2 | 4.57± 0.29              | 103749-270717   | 15.1± 0.7               | 1.96                                    | 103749-270716    | 13.26    | 0.514           | 0.610 | 1.443                                   | 0.00811       |
| 45        | 104055.0+055932 | 10:40:55.02 | +05:59:32.05 | 0.64     | -0.47±0.06        | -0.89±0.09        | 0.2                   | 0.50 | --             | --  | 0.27± 0.07              | 104054+055931   | 16.2± 0.6               | 1.40                                    | -- -- -- --      | --       | --              | --    | --                                      | 0.02800       |
| 46        | 104432.8-070407 | 10:44:32.82 | -07:04: 7.61 | 0.08     | 0.09±0.00         | -0.41±0.00        | 0.2                   | 2.0  | 0.6            | 2.7 | 111.37± 0.62            | 104432-070407   | 31.6± 1.0               | 1.72                                    | 104432-070407    | 14.52    | 0.509           | 0.669 | 2.089                                   | 0.13240       |
| 47        | 110521.8+381402 | 11:05:21.86 | +38:14: 2.85 | 0.79     | -0.30±0.02        | -0.20±0.03        | --                    | --   | --             | --  | 1.25± 0.05              | 110521+381402   | 24.1± 0.8               | 0.17                                    | 110521+381402    | 12.10    | 0.554           | 0.673 | 1.173                                   | 0.02823       |
| 48        | 111725.8+074337 | 11:17:25.88 | +07:43:39.89 | 1.60     | 0.08±0.03         | -0.39±0.04        | 0.4                   | 2.4  | 0.8            | 2.7 | 1.02± 0.12              | 111725+074339   | 11.4± 0.5               | 0.60                                    | -- -- -- --      | --       | --              | --    | --                                      | 0.47700       |
| 49        | 112230.1+241643 | 11:22:30.13 | +24:16:43.03 | 2.20     | -0.23±0.09        | -0.92±0.11        | 0.4                   | 0.40 | --             | --  | 0.82± 0.17              | 112230+241644   | 24.2± 1.2               | 1.40                                    | 112230+241643    | 11.43    | 0.617           | 0.741 | 1.373                                   | 0.02969       |
| 50        | 113305.2-040045 | 11:33: 5.22 | -04:00:45.61 | 0.54     | 0.23±0.07         | -0.20±0.07        | 0.2                   | 2.6  | 0.4            | 2.2 | 4.36± 0.53              | 113305-040047   | 318.4± 10.3             | 2.74                                    | 113305-040045    | 12.21    | 0.618           | 0.750 | 2.257                                   | 0.05190       |
| 51        | 114220.4+195741 | 11:42:20.40 | +19:57:41.25 | 2.45     | 0.27±0.37         | 0.12±0.31         | --                    | --   | 0.2            | 1.0 | 0.65± 0.31              | 114220+195747   | 158.7± 5.6              | 2.60                                    | -- -- -- --      | --       | --              | --    | --                                      | --            |
| 52        | 114224.3+200711 | 11:42:24.36 | +20:07:11.29 | 1.62     | -0.22±0.17        | 0.10±0.20         | --                    | --   | --             | --  | 0.24± 0.13              | 114224+200711   | 12.2± 0.6               | 1.13                                    | 114224+200711    | 12.31    | 0.514           | 0.747 | 1.500                                   | 0.01994       |
| 53        | 114256.3+195809 | 11:42:56.34 | +19:58: 9.57 | 2.68     | -0.55±0.11        | -0.20±0.21        | --                    | --   | --             | --  | 0.54± 0.18              | 114256+195810   | 21.5± 1.2               | 0.70                                    | -- -- -- --      | --       | --              | --    | --                                      | --            |
| 54        | 114358.0+201104 | 11:43:58.03 | +20:11: 4.95 | 3.34     | -0.29±0.18        | -0.90±0.33        | 0.4                   | 0.40 | --             | --  | 0.51± 0.29              | 114358+201116   | 2.9± 0.4                | 2.58                                    | 114358+201104    | 14.23    | 0.380           | 0.762 | 1.110                                   | -- --         |
| 55        | 114359.1+200435 | 11:43:59.12 | +20:04:35.35 | 1.80     | 0.16±0.19         | -0.68±0.23        | 0.4                   | 0.80 | --             | --  | 0.13± 0.08              | 114359+200432   | 4.3± 0.5                | 1.32                                    | 114359+200435    | 12.27    | 0.273           | 0.906 | 1.641                                   | 0.02460       |
| 56        | 114454.8+194635 | 11:44:54.90 | +19:46:35.42 | 0.63     | -0.23±0.14        | -0.01±0.16        | --                    | --   | --             | --  | 1.01± 0.10              | 114454+194624   | 2.4± 0.4                | 2.05                                    | 114454+194635    | 12.58    | 0.459           | 0.760 | 1.328                                   | 0.02738       |
| 57        | 114507.5+195419 | 11:45: 7.56 | +19:54:19.08 | 1.30     | 0.19±0.19         | -0.21±0.17        | 0.2                   | 2.6  | 0.4            | 2.2 | 0.32± 0.12              | 114507+195416   | 107.7± 3.3              | 2.12                                    | -- -- -- --      |          |                 |       |   |               |



Table 4—Continued

| Src.<br># | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio<br>$\frac{M-S}{S+M}$<br>$\frac{H-M}{H+M}$ |            | Thermal – Non thermal |      |                |      | F <sub>X</sub><br>[cgs] | Name<br>NVSS J+ | F <sub>R</sub><br>[mJy] | R <sub>Xr</sub><br>f <sub>&lt;99%</sub> | Name<br>2MASS J+ | 2MASS<br>K | S Mag & Colors |       | R <sub>xi</sub><br>f <sub>&lt;99%</sub> | Redshift<br>z |
|-----------|-----------------|-------------|--------------|----------|--|------------|-----------------------|------|----------------|------|-------------------------|-----------------|-------------------------|---|------------------|------------|----------------|-------|---|---------------|
|           |                 |             |              |          |  |            | N <sub>H</sub>        | KT   | N <sub>H</sub> | Γ    |                         |                 |                         |   |                  |            | H – K          | J – H |   |               |
| 79        | 125745.1+275741 | 12:57:45.21 | +27:57:40.87 | 1.71     | -0.00±0.14   | -0.38±0.21 | 0.1                   | 2.0  | 0.4            | 2.7  | 0.20± 0.07              | 125745+275741   | 19.3± 0.7               | 1.70                                    | ---              | ---        | ---            | ---   | ---                                     | ---           |
| 80        | 125801.8+282002 | 12:58: 1.91 | +28:20: 2.42 | 0.96     | -0.00±0.07   | -0.02±0.07 | ---                   | ---  | 0.01           | 1.2  | 0.55± 0.08              | 125802+282002   | 23.5± 0.8               | 1.54                                    | ---              | ---        | ---            | ---   | ---                                     | ---           |
| 81        | 125805.5+281434 | 12:58: 5.55 | +28:14:36.95 | 2.07     | -0.37±0.05   | -0.66±0.08 | 0.01                  | 1.0  | 0.2            | 3.7  | 0.53± 0.08              | 125805+281437   | 21.8± 0.8               | 0.68                                    | 125805+281436    | 12.70      | 0.618          | 0.564 | 1.756                                   | 0.024060      |
| 82        | 125810.1+242100 | 12:58:10.10 | +24:21: 0.52 | 2.43     | 0.10±0.37  | 0.01±0.35  | ---                   | ---  | 0.1            | 1.2  | 0.34± 0.24              | 125809+242051   | 3.4± 0.4                | 2.45                                    | 125810+242100    | 13.46      | 0.373          | 0.650 | 1.770                                   | 0.022155      |
| 83        | 125811.9+282749 | 12:58:11.96 | +28:27:49.19 | 0.83     | -0.02±0.13   | -0.19±0.14 | ---                   | ---  | 0.2            | 2.0  | 0.22± 0.07              | 125811+282749   | 90.6± 2.7               | 0.25                                    | ---              | ---        | ---            | ---   | ---                                     | ---           |
| 84        | 125837.4+271036 | 12:58:37.42 | +27:10:36.39 | 1.19     | 0.24±0.16  | -0.28±0.16 | 0.2                   | 2.2  | 0.4            | 2.5  | 0.42± 0.16              | 125837+271033   | 5.6± 0.4                | 1.94                                    | 125837+271036    | 14.30      | 0.379          | 0.627 | 1.667                                   | 0.025570      |
| 85        | 125838.3+272258 | 12:58:38.34 | +27:22:58.46 | 0.45     | 0.15±0.07  | -0.28±0.07 | 0.2                   | 2.2  | 0.4            | 2.5  | 1.18± 0.13              | 125838+272259   | 11.6± 0.5               | 1.08                                    | ---              | ---        | ---            | ---   | ---                                     | ---           |
| 86        | 125858.9+274646 | 12:58:58.91 | +27:46:46.70 | 7.24     | 0.23±0.27  | -0.01±0.21 | ---                   | ---  | 0.2            | 1.5  | 2.34± 0.61              | 125859+274645   | 71.9± 2.5               | 0.91                                    | ---              | ---        | ---            | ---   | ---                                     | ---           |
| 87        | 125902.1+280659 | 12:59: 2.16 | +28:06:59.34 | 1.56     | -0.34±0.08   | -0.93±0.08 | 0.4                   | 0.40 | ---            | ---  | 0.23± 0.06              | 125902+280658   | 7.5± 0.5                | 0.21                                    | 125902+280659    | 13.96      | 0.415          | 0.507 | 2.055                                   | 0.031475      |
| 88        | 130030.7+283308 | 13:00:30.77 | +28:33: 8.68 | 1.86     | 0.99±0.64  | 0.38±0.56  | 4.                    | 1.6  | 4.             | 3.2  | 0.31± 0.08              | 130030+283310   | 7.6± 1.1                | 0.49                                    | ---              | ---        | ---            | ---   | ---                                     | ---           |
| 89        | 130038.0+280325 | 13:00:38.07 | +28:03:23.64 | 1.66     | -0.68±0.06   | -0.89±0.07 | ---                   | ---  | ---            | ---  | 0.21± 0.04              | 130037+280323   | 21.1± 1.1               | 0.82                                    | 130038+280323    | 12.89      | 0.500          | 0.570 | 1.971                                   | 0.026151      |
| 90        | 130040.6+283111 | 13:00:40.70 | +28:31:14.24 | 1.17     | -0.03±0.07   | -0.58±0.08 | 0.2                   | 1.2  | 0.4            | 3.5  | 0.09± 0.02              | 130040+283116   | 6.3± 0.5                | 0.90                                    | ---              | ---        | ---            | ---   | ---                                     | 0.029700      |
| 91        | 130113.0+281428 | 13:01:13.09 | +28:14:28.12 | 1.80     | -0.33±0.27   | -0.08±0.38 | ---                   | ---  | ---            | ---  | 0.25± 0.15              | 130112+281428   | 8.0± 0.5                | 1.67                                    | ---              | ---        | ---            | ---   | ---                                     | ---           |
| 92        | 130153.0+281343 | 13:01:53.02 | +28:13:43.21 | 0.91     | 0.12±0.12  | -0.35±0.15 | 0.2                   | 2.0  | 0.4            | 2.7  | 0.19± 0.05              | 130153+281344   | 57.2± 2.1               | 1.62                                    | ---              | ---        | ---            | ---   | ---                                     | ---           |
| 93        | 130212.7+281253 | 13:02:12.80 | +28:12:53.75 | 1.20     | -0.35±0.14   | -0.87±0.20 | 0.2                   | 0.50 | ---            | ---  | 0.19± 0.08              | 130213+281247   | 2.7± 0.4                | 3.00                                    | 130212+281253    | 14.35      | 0.400          | 0.635 | 0.246                                   | 0.027360      |
| 94        | 130342.4+241443 | 13:03:42.42 | -24:14:43.22 | 0.66     | 0.22±0.02  | -0.46±0.02 | 0.4                   | 1.6  | 0.8            | 3.2  | 85.21± 2.98             | 130342-241442   | 36.4± 1.2               | 2.67                                    | 130342-241443    | 14.50      | 0.587          | 0.867 | 1.852                                   | 0.127600      |
| 95        | 131142.2-012343 | 13:11:42.24 | -01:23:43.80 | 0.72     | 0.99±0.56  | 0.77±0.12  | ---                   | ---  | 4.             | 0.75 | 0.31± 0.05              | 131142-012345   | 16.4± 1.1               | 0.99                                    | ---              | ---        | ---            | ---   | ---                                     | ---           |
| 96        | 131459.3-163524 | 13:14:59.19 | -16:35:22.64 | 1.40     | -0.33±0.07   | -0.29±0.11 | ---                   | ---  | ---            | ---  | 2.78± 0.20              | 131459-163522   | 8.3± 1.1                | 2.08                                    | 131459-163522    | 10.91      | 0.851          | 0.580 | 2.341                                   | 0.006351      |
| 97        | 131524.0-162306 | 13:15:24.07 | -16:23: 6.60 | 0.45     | -0.53±0.04   | -0.78±0.06 | ---                   | ---  | ---            | ---  | 1.97± 0.10              | 131523-162307   | 34.7± 1.1               | 2.38                                    | ---              | ---        | ---            | ---   | ---                                     | 0.009000      |
| 98        | 131619.6-164007 | 13:16:19.62 | -16:40: 7.49 | 1.53     | 0.38±0.18  | -0.15±0.16 | 0.4                   | 2.6  | 0.6            | 2.2  | 0.83± 0.30              | 131619-164007   | 4.0± 0.5                | 3.02                                    | ---              | ---        | ---            | ---   | ---                                     | 0.018000      |
| 99        | 132409.9+135835 | 13:24: 9.98 | +13:58:35.75 | 0.31     | -0.35±0.01   | -0.82±0.02 | 0.2                   | 0.60 | ---            | ---  | 4.80± 0.14              | 132410+135839   | 7.2± 0.5                | 2.90                                    | 132409+135835    | 11.12      | 0.286          | 0.717 | 1.740                                   | 0.022983      |
| 100       | 132428.8+140533 | 13:24:28.87 | +14:05:33.06 | 0.59     | -0.12±0.08   | -0.33±0.09 | 0.01                  | 2.2  | 0.2            | 2.2  | 0.92± 0.16              | 132428+140536   | 8.1± 0.5                | 1.85                                    | ---              | ---        | ---            | ---   | ---                                     | 0.024233      |
| 101       | 132729.5-312324 | 13:27:29.60 | -31:23:24.45 | 0.80     | 0.05±0.08  | -0.56±0.10 | 0.2                   | 1.2  | 0.6            | 3.5  | 0.59± 0.09              | 132729-312327   | 2.4± 0.6                | 2.45                                    | 132729-312324    | 12.11      | 0.830          | 0.670 | 0.680                                   | 0.048827      |
| 102       | 132749.9-312107 | 13:27:49.97 | -31:21: 7.12 | 1.40     | 0.35±0.20  | -0.15±0.18 | ---                   | ---  | 0.4            | 2.0  | 0.15± 0.06              | 132750-312103   | 19.0± 0.8               | 1.96                                    | ---              | ---        | ---            | ---   | ---                                     | ---           |
| 103       | 132755.1-313217 | 13:27:55.11 | -31:32:17.65 | 0.65     | -0.41±0.09   | -0.54±0.18 | ---                   | ---  | 0.1            | 3.0  | 0.74± 0.11              | 132754-313215   | 5.0± 0.5                | 2.65                                    | 132755-313217    | 12.35      | 0.563          | 0.592 | 2.685                                   | 0.052952      |
| 104       | 132929.2+113730 | 13:29:29.28 | +11:37:30.40 | 1.39     | -0.68±0.13   | 0.47±0.23  | ---                   | ---  | ---            | ---  | 0.26± 0.12              | 132929+113728   | 2.9± 0.4                | 0.81                                    | 132929+113730    | 12.99      | 0.358          | 0.735 | 0.859                                   | 0.020921      |
| 105       | 133106.4-315508 | 13:31: 6.48 | -31:55: 8.03 | 1.10     | 0.33±0.16  | -0.57±0.14 | 0.6                   | 1.0  | ---            | ---  | 0.34± 0.16              | 133106-315509   | 6.6± 0.5                | 1.34                                    | 133106-315508    | 13.08      | 0.110          | 0.342 | 2.280                                   | ---           |
| 106       | 133110.8-014345 | 13:31:10.83 | -01:43:45.23 | 1.36     | 0.11±0.02  | -0.46±0.02 | 0.2                   | 1.6  | 0.4            | 3.0  | 26.05± 1.68             | 133110-014359   | 3.5± 0.5                | 1.97                                    | 133110-014345    | 13.54      | 0.439          | 0.619 | 2.658                                   | 0.087247      |
| 107       | 133112.1-313928 | 13:31:12.17 | -31:39:28.50 | 1.48     | 0.62±0.26  | 0.21±0.21  | ---                   | ---  | 0.6            | 1.2  | 0.20± 0.12              | 133111-313927   | 7.4± 0.6                | 1.89                                    | ---              | ---        | ---            | ---   | ---                                     | ---           |
| 108       | 133137.7-313310 | 13:31:37.74 | -31:33:10.14 | 2.05     | -0.16±0.20   | -0.83±0.21 | 0.4                   | 0.60 | ---            | ---  | 0.75± 0.32              | 133137-313320   | 3.7± 0.6                | 1.80                                    | 133137-313310    | 13.47      | 0.343          | 0.795 | 0.825                                   | 0.047410      |
| 109       | 133231.7-314153 | 13:32:31.78 | -31:41:53.95 | 1.62     | 0.58±0.28  | -0.14±0.22 | 0.6                   | 2.2  | 0.8            | 2.5  | 0.09± 0.04              | 133231-314153   | 4.5± 0.5                | 0.22                                    | ---              | ---        | ---            | ---   | ---                                     | ---           |
| 110       | 133353.0-312003 | 13:33:53.01 | -31:20: 3.11 | 1.18     | 0.56±0.16  | -0.09±0.15 | ---                   | ---  | 0.8            | 2.2  | 0.50± 0.16              | 133352-312002   | 9.3± 0.6                | 0.48                                    | ---              | ---        | ---            | ---   | ---                                     | ---           |
| 111       | 133503.0-313918 | 13:35: 3.02 | -31:39:18.91 | 0.81     | -0.30±0.08   | -0.70±0.12 | 0.1                   | 0.90 | ---            | ---  | 0.62± 0.14              | 133503-313917   | 14.6± 0.6               | 0.71                                    | 133503-313918    | 12.28      | 0.323          | 0.783 | 0.322                                   | 0.052072      |
| 112       | 133913.3+043715 | 13:39:13.35 | +04:37:15.15 | 2.61     | -0.64±0.39   | -0.36±1.14 | ---                   | ---  | ---            | ---  | 0.07± 0.11              | 133913+043726   | 2.6± 0.5                | 2.02                                    | ---              | ---        | ---            | ---   | ---                                     | 0.022874      |
| 113       | 134056.5+262910 | 13:40:56.55 | +26:29:10.37 | 1.30     | -0.19±0.16   | -0.74±0.25 | 0.2                   | 0.80 | ---            | ---  | 0.16± 0.08              | 134056+262911   | 26.0± 0.9               | 1.02                                    | 134056+262910    | 13.54      | 0.252          | 0.640 | 1.299                                   | 0.078961      |
| 114       | 134148.9+260900 | 13:41:48.97 | +26:09: 0.73 | 1.47     | -0.30±0.17   | -0.24±0.25 | ---                   | ---  | ---            | ---  | 0.34± 0.14              | 134149+260901   | 11.4± 0.5               | 2.08                                    | ---              | ---        | ---            | ---   | ---                                     | ---           |
| 115       | 134742.5-331141 | 13:47:42.52 | -33:11:41.28 | 0.98     | 0.07±0.16  | -0.15±0.19 | ---                   | ---  | 0.2            | 1.7  | 0.45± 0.17              | 134742-331141   | 15.9± 0.7               | 1.55                                    | ---              | ---        | ---            | ---   | ---                                     | 0.039640      |
| 116       | 134807.9-324614 | 13:48: 7.93 | -32:46:14.41 | 1.52     | 0.56±0.19  | -0.27±0.18 | 0.6                   | 1.8  | 1.             | 3.0  | 0.25± 0.15              | 134807-324613   | 207.6± 6.2              | 1.00                                    | ---              | ---        | ---            | ---   | ---                                     | ---           |
| 117       | 135022.4-333657 | 13:50:22.42 | -33:36:57.55 | 0.39     | 0.16±0.05  | -0.28±0.06 | 0.2                   | 2.2  | 0.4            | 2.5  | 1.82± 0.20              | 135022-333657   | 76.4± 2.3               | 2.53                                    | ---              | ---        | ---            | ---   | ---                                     | ---           |
| 118       | 140136.3-110744 | 14:01:36.31 | -11:07:44.80 | 0.37     | 0.13±0.03  | -0.60±0.03 | 0.4                   | 1.0  | 0.6            | 4.0  | 1.19± 0.07              | 140136-110747   | 4.8± 0.5                | 2.97                                    | 140136-110744    | 12.75      | 0.549          | 0.700 | 2.679                                   | 0.071864      |
| 119       | 141429.0-002231 | 14:14:29.07 | -00:22:31.33 | 1.30     | -0.56±0.17   | -0.78±0.40 | ---                   | ---  | ---            | ---  | 0.09± 0.04              | 141429-002227   | 10.8± 0.5               | 2.95                                    | 141429+002231    | 14.69      | 0.396          | 0.616 | 1.369                                   | 0.134400      |
| 120       | 141             |             |              |          |  |            |                       |      |                |      |                         |                 |                         |   |                  |            |                |       |   |               |



Table 4—Continued

| Src.<br># | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio    |                   | Thermal – Non thermal |      |                |     | F <sub>x</sub><br>[cgs] | Name<br>NVSS J+ | F <sub>r</sub><br>[mJy] | R <sub>xr</sub><br>f<99% | Name<br>2MASS J+ | 2MASS<br>K | SS Mag & Colors |       | R <sub>xi</sub><br>f<99% | Redshift<br>z |
|-----------|-----------------|-------------|--------------|----------|-------------------|-------------------|-----------------------|------|----------------|-----|-------------------------|-----------------|-------------------------|--------------------------|------------------|------------|-----------------|-------|--------------------------|---------------|
|           |                 |             |              |          | $\frac{M-S}{S+M}$ | $\frac{H-M}{H+M}$ | N <sub>H</sub>        | KT   | N <sub>H</sub> | Γ   |                         |                 |                         |                          |                  |            | H – K           | J – H |                          |               |
| 140       | 162944.8+404842 | 16:29:44.85 | +40:48:42.23 | 0.35     | -0.52±0.03        | -0.88±0.03        | 0.1                   | 0.50 | --             | --  | 2.99± 0.14              | 162944+404842   | 7.5± 0.5                | 2.88                     | 162944+404842    | 11.08      | 0.272           | 0.849 | 1.034                    | 0.02949       |
| 141       | 162958.1+403743 | 16:29:58.11 | +40:37:43.08 | 1.96     | -0.24±0.21        | -0.21±0.22        | --                    | --   | 0.             | 1.7 | 0.40± 0.25              | 162957+403744   | 11.7± 0.5               | 1.02                     | 162958+403743    | 11.54      | 0.297           | 0.979 | 0.452                    | 0.02085       |
| 142       | 165758.0+275110 | 16:57:58.02 | +27:51:10.15 | 6.17     | 0.49±0.16         | -0.65±0.17        | 0.8                   | 0.70 | --             | --  | 15.04± 8.44             | 165758+275116   | 50.0± 1.9               | 1.05                     | 165758+275110    | 11.26      | 0.212           | 0.929 | 0.952                    | 0.03489       |
| 143       | 165823.8+585722 | 16:58:23.86 | +58:57:22.48 | 3.00     | 0.08±0.34         | -1.00±0.32        | --                    | --   | --             | --  | 0.15± 0.24              | 165823+585721   | 10.9± 0.5               | 0.50                     | 165823+585722    | 12.23      | 0.393           | 1.018 | 0.484                    | 0.01861       |
| 144       | 165831.4+585617 | 16:58:31.47 | +58:56:17.16 | 0.91     | -0.54±0.08        | -0.70±0.17        | --                    | --   | 0.2            | 3.7 | 1.99± 0.41              | 165831+585615   | 156.7± 5.6              | 1.95                     | --               | --         | --              | --    | --                       | 0.01830       |
| 145       | 170533.5+785116 | 17:05:33.56 | +78:51:16.43 | 1.85     | 0.05±0.26         | -0.51±0.23        | 0.2                   | 1.4  | 0.4            | 3.2 | 0.36± 0.15              | 170533+785103   | 2.3± 0.5                | 2.01                     | 170533+785116    | 13.74      | 0.524           | 0.886 | 0.080                    | 0.06497       |
| 146       | 170930.7+784137 | 17:09:30.72 | +78:41:37.15 | 2.12     | -0.41±0.26        | -0.04±0.36        | --                    | --   | --             | --  | 0.17± 0.08              | 170930+784149   | 10.1± 1.2               | 2.89                     | --               | --         | --              | --    | --                       | --            |
| 147       | 171148.4+635607 | 17:11:48.35 | +63:56: 7.95 | 0.91     | -0.15±0.12        | -0.02±0.13        | --                    | --   | --             | --  | 0.59± 0.16              | 171148+635605   | 43.2± 1.4               | 1.81                     | --               | --         | --              | --    | --                       | --            |
| 148       | 171522.8+572441 | 17:15:22.85 | +57:24:41.02 | 0.78     | 0.15±0.03         | -0.72±0.03        | 0.6                   | 0.70 | --             | --  | 31.82± 2.01             | 171522+572440   | 57.0± 1.8               | 0.94                     | 171522+572441    | 11.48      | 0.486           | 0.839 | 1.377                    | 0.02757       |
| 149       | 192131.8+435943 | 19:21:31.97 | +43:59:43.23 | 0.20     | 0.28±0.02         | -0.24±0.02        | 0.4                   | 2.2  | 0.6            | 2.5 | 7.98± 0.24              | 192132+435946   | 4.6± 0.5                | 2.78                     | --               | --         | --              | --    | --                       | 0.04547       |
| 150       | 214907.4-304203 | 21:49: 7.42 | -30:42: 3.98 | 0.16     | 0.08±0.01         | -0.45±0.01        | 0.2                   | 1.8  | 0.6            | 3.0 | 65.87± 0.51             | 214907-304204   | 31.5± 1.1               | 0.86                     | 214907-304203    | 13.32      | 0.510           | 0.593 | 2.223                    | 0.12017       |
| 151       | 220201.8-315210 | 22:02: 1.73 | -31:52:10.22 | 0.13     | 0.36±0.03         | 0.89±0.00         | --                    | --   | --             | --  | 264.46± 1.50            | 220201-315210   | 36.8± 1.5               | 2.88                     | 220201-315210    | 10.45      | 1.064           | 0.992 | 2.016                    | 0.00862       |
| 152       | 221905.8-390043 | 22:19: 5.88 | -39:00:43.39 | 1.92     | -0.44±0.22        | -0.92±0.23        | 0.4                   | 0.50 | --             | --  | 0.05± 0.06              | 221905-390050   | 7.0± 0.5                | 2.64                     | 221905-390043    | 14.73      | 0.540           | 0.565 | 1.881                    | 0.14958       |
| 153       | 223416.7-374913 | 22:34:16.72 | -37:49:13.15 | 1.22     | -0.53±0.19        | -1.00±0.67        | --                    | --   | --             | --  | 0.06± 0.04              | 223416-374908   | 19.1± 0.7               | 2.54                     | 223416-374913    | 14.31      | 0.386           | 0.741 | 0.852                    | 0.15159       |
| 154       | 223655.8-153038 | 22:36:55.89 | -15:30:38.85 | 7.62     | 0.04±0.15         | -0.42±0.35        | 0.1                   | 1.8  | 0.4            | 2.7 | 3.57± 2.30              | 223655-153036   | 40.6± 2.0               | 0.43                     | 223655-153038    | 13.03      | 0.568           | 0.682 | 0.652                    | --            |
| 155       | 230247.9+084353 | 23:02:47.97 | +08:43:52.28 | 2.25     | 0.26±0.03         | -0.34±0.03        | --                    | --   | 2.             | 2.7 | 1.46± 0.15              | 230248+084350   | 25.2± 0.9               | 1.03                     | --               | --         | --              | --    | --                       | 0.72000       |
| 156       | 233609.7+212024 | 23:36: 9.75 | +21:20:24.78 | 0.67     | 0.12±0.04         | -0.28±0.04        | 0.2                   | 2.2  | 0.4            | 2.5 | 1.51± 0.14              | 233609+212024   | 83.6± 2.5               | 0.23                     | --               | --         | --              | --    | --                       | --            |
| 157       | 233614.1+020919 | 23:36:14.17 | +02:09:19.16 | 0.16     | -0.05±0.01        | -0.43±0.02        | 0.1                   | 1.8  | 0.4            | 2.7 | 4.64± 0.10              | 233614+020918   | 65.8± 2.7               | 2.67                     | --               | --         | --              | --    | --                       | --            |
| 158       | 233630.4+210846 | 23:36:30.41 | +21:08:45.90 | 0.36     | 0.17±0.00         | -0.47±0.00        | 0.2                   | 1.4  | 0.6            | 3.2 | 92.02± 0.48             | 233630+210845   | 54.5± 2.4               | 0.55                     | --               | --         | --              | --    | --                       | 0.05510       |
| 159       | 234818.9-281330 | 23:48:18.97 | -28:13:30.95 | 8.59     | -0.43±0.21        | -0.81±0.28        | 0.1                   | 0.70 | --             | --  | 1.01± 0.46              | 234819-281347   | 2.5± 0.5                | 1.39                     | 234818-281330    | 14.91      | 0.714           | 0.732 | 2.155                    | --            |
| 160       | 235413.6-102509 | 23:54:13.66 | -10:25: 9.08 | 0.77     | 0.13±0.08         | -0.71±0.09        | 0.6                   | 0.70 | --             | --  | 0.72± 0.12              | 235413-102512   | 6.2± 0.5                | 2.18                     | 235413-102509    | 12.75      | 0.601           | 0.792 | 0.574                    | 0.07770       |
| Quasars   |                 |             |              |          |                   |                   |                       |      |                |     |                         |                 |                         |                          |                  |            |                 |       |                          |               |
| 1         | 000020.4-322100 | 00:00:20.41 | -32:21: 0.32 | 0.27     | -0.10±0.04        | -0.34±0.05        | --                    | --   | 0.6            | 2.2 | 2.04± 0.20              | 000020-322059   | 520.9± 15.6             | 2.85                     | --               | --         | --              | --    | --                       | 1.27500       |
| 2         | 001318.5-271514 | 00:13:18.58 | -27:15:14.30 | 0.16     | 0.05±0.02         | -0.34±0.02        | 0.2                   | 2.0  | 0.4            | 2.5 | 2.33± 0.09              | 001318-271515   | 37.6± 1.2               | 1.39                     | --               | --         | --              | --    | --                       | --            |
| 3         | 001708.8+813508 | 00:17: 8.81 | +81:35: 8.67 | 0.05     | 0.38±0.01         | -0.17±0.01        | --                    | --   | 6.             | 2.0 | 52.27± 0.53             | 001708+813508   | 692.5± 20.8             | 1.90                     | 001708+813508    | 13.54      | 0.580           | 0.597 | 2.092                    | 2.42880       |
| 4         | 001831.4+162043 | 00:18:31.42 | +16:20:43.09 | 0.42     | 0.22±0.06         | -0.35±0.07        | --                    | --   | 4.             | 2.7 | 0.51± 0.06              | 001831+162042   | 268.8± 8.1              | 2.76                     | --               | --         | --              | --    | --                       | 1.33300       |
| 5         | 003255.7+394620 | 00:32:55.75 | +39:46:20.19 | 1.23     | 0.16±0.11         | -0.59±0.12        | 2.                    | 1.8  | 2.             | 3.7 | 1.00± 0.30              | 003255+394618   | 38.8± 1.5               | 2.54                     | --               | --         | --              | --    | --                       | 1.14000       |
| 6         | 003430.8-213351 | 00:34:30.85 | -21:33:51.61 | 0.45     | 0.02±0.06         | -0.29±0.06        | --                    | --   | 1.             | 2.2 | 2.14± 0.23              | 003430-213349   | 167.2± 5.8              | 2.90                     | --               | --         | --              | --    | --                       | 0.76400       |
| 7         | 004013.7+405004 | 00:40:13.72 | +40:50: 4.62 | 0.09     | 0.47±0.01         | -0.24±0.01        | 0.4                   | 2.0  | 0.8            | 2.7 | 101.84± 1.50            | 004013+405005   | 47.3± 1.8               | 2.51                     | 004013+405004    | 14.71      | 0.470           | 0.962 | 0.965                    | --            |
| 8         | 004016.3-271913 | 00:40:16.31 | -27:19:13.16 | 0.18     | -0.16±0.02        | -0.62±0.03        | 0.2                   | 1.2  | 0.6            | 3.7 | 34.30± 1.19             | 004016-271912   | 160.2± 4.8              | 1.86                     | --               | --         | --              | --    | --                       | 0.17000       |
| 9         | 004906.5-294045 | 00:49: 6.53 | -29:40:45.62 | 0.49     | 0.02±0.07         | -0.41±0.08        | 0.1                   | 1.8  | 0.4            | 2.7 | 0.66± 0.10              | 004906-294045   | 13.6± 0.6               | 2.94                     | --               | --         | --              | --    | --                       | --            |
| 10        | 005429.5-275307 | 00:54:29.50 | -27:53: 7.96 | 2.65     | 0.69±0.36         | -0.00±0.39        | --                    | --   | 4.             | 2.0 | 0.19± 0.19              | 005429-275311   | 7.1± 0.5                | 1.20                     | --               | --         | --              | --    | --                       | 0.83800       |
| 11        | 011853.7-010009 | 01:18:53.75 | -01:00: 9.42 | 0.77     | 0.10±0.08         | -0.84±0.07        | 0.6                   | 0.50 | --             | --  | 0.50± 0.07              | 011853-010010   | 4.0± 0.5                | 1.49                     | --               | --         | --              | --    | --                       | 0.04512       |
| 12        | 012505.5+014626 | 01:25: 5.54 | +01:46:26.49 | 0.53     | 0.13±0.02         | -0.26±0.02        | --                    | --   | 2.             | 2.2 | 3.16± 0.12              | 012505+014626   | 186.6± 5.6              | 1.10                     | --               | --         | --              | --    | --                       | 1.55900       |
| 13        | 014318.6+022821 | 01:43:18.67 | +02:28:21.35 | 0.60     | 0.00±0.09         | -0.55±0.11        | 0.8                   | 2.2  | 2.             | 3.5 | 0.66± 0.14              | 014318+022820   | 15.7± 0.6               | 2.02                     | --               | --         | --              | --    | --                       | 0.83000       |
| 14        | 014922.3+055554 | 01:49:22.36 | +05:55:54.03 | 0.25     | 0.20±0.04         | -0.33±0.04        | --                    | --   | 4.             | 2.5 | 3.38± 0.22              | 014922+055553   | 906.3± 27.2             | 0.85                     | --               | --         | --              | --    | --                       | 2.34499       |
| 15        | 015328.4+260937 | 01:53:28.40 | +26:09:37.40 | 1.48     | -0.04±0.23        | -0.48±0.28        | 0.2                   | 2.2  | 0.8            | 3.0 | 0.13± 0.06              | 015328+260939   | 38.7± 1.2               | 1.80                     | 015328+260937    | 12.37      | 1.316           | 1.019 | 1.743                    | 0.32970       |
| 16        | 020858.2+351914 | 02:08:58.21 | +35:19:14.68 | 1.80     | 0.48±0.23         | -0.35±0.22        | 0.6                   | 1.6  | 0.8            | 3.2 | 0.04± 0.03              | 020858+351912   | 16.6± 0.9               | 1.33                     | --               | --         | --              | --    | --                       | --            |
| 17        | 021000.2-100353 | 02:10: 0.22 | -10:03:53.70 | 0.59     | 0.13±0.08         | -0.19±0.08        | --                    | --   | 4.             | 2.0 | 2.02± 0.31              | 021000-100353   | 265.5± 8.0              | 0.88                     | --               | --         | --              | --    | --                       | 1.97600       |
| 18        | 021640.7-044404 | 02:16:40.72 | -04:44: 4.89 | 0.18     | -0.08±0.02        | -0.37±0.02        | --                    | --   | 1.             | 2.5 | 3.89± 0.14              | 021640-044404   | 88.3± 2.7               | 2.82                     | 021640-044404    | 14.52      | 0.461           | 0.186 | 0.603                    | 0.87000       |
| 19        | 022504.5+184649 | 02:25: 4.55 | +18:46:49.46 | 0.03     | 0.44±0.00         | -0.09±0.00        | --                    | --   | 6.             | 1.7 | 219.48± 1.02            | 022504+184648   | 460.8± 13.8             | 1.53                     | --               | --         | --              | --    | --                       | 2.69000       |
| 20        | 023838.9+163659 | 02:38:38.91 | +16:36:59.18 | 0.18     | 0.18±0.00         | -0.40±0.00        | --                    | --   | 2.             | 3.0 | 40.89± 0.28             | 023838+163658   | 1941.4± 58.2            | 1.08                     | 023838+163659    | 13.23      | 0.871           | 1.213 | 0.688                    | 0.94000       |
| 21        | 024008.1-230915 | 02:40: 8.15 | -23:09:15.37 | 0.06     | 0.09±0.01         | -0.32±0.01        | --                    | --   | 2.             | 2.5 | 31.55± 0.37             | 024008-230916   | 6256.4± 187.7           | 0.93                     | 024008-230915    | 13.63      | 0.879           | 0.601 | 1.875                    | 1.65750       |
| 22        | 025315.6-012405 | 02:53:15.63 | -01:24: 5.21 | 0.58     | -0.23±0.09        | -0.50±0.12        | 0.                    | 1.6  | 0.2            | 3.0 | 0.51± 0.10              | 025315-012405   | 32.8± 1.1               | 0.51                     | --               | --         | --              | --    | --                       | --            |
| 23        | 031357.6+411524 | 03:13:57.61 | +41:15:24.00 | 0.67     | -0.46±0.02        | -0.59±0.04        | --                    | --   | 0.1            | 3.2 | 3.98± 0.33              | 031357+411522   | 40.6± 1.6               | 2.60                     | 031357+411524    | 12.19      | 0.438           | 0.716 | 0.472                    | 0.02940       |
| 24        | 031522.5-031647 | 03:15:22.60 | -03:16:47.88 | 0.38     | 0.01±0.05         | -0.36±0.06        | --                    | --   | 1.             | 2.5 | 8.88± 0.90              | 031522-031646   | 1300.6± 41.3            | 2.93                     | 031522-031647    | 15.43      | 0.643           | 0.594 | 2.910                    | 1.07200       |
| 25        | 032444.2-291820 | 03:24:44.26 | -29:18:20.77 | 0.50     | 0.06±0.07         | -0.23±0.08        | --                    | --   | 2.             | 2.0 | 1.55± 0.18              | 032444-291821   | 236.5± 7.1              | 1.53                     | --               | --         | --              | --    | --                       | 4.21000       |
| 26        | 032613.8+022514 | 03:26:13.86 | +02:25:14.88 | 0.09     | 0.09±0.01         | -0.52±0.01        | 0.4                   | 1.4  | 0.6            | 3.2 | 64.96± 1.18             | 032613+022515   | 67.7± 2.1               | 1.87                     | 032613+022514    | 13.86      | 0.656           | 0.645 | 1.321                    | 0.14700       |
| 27        | 033211.6-273726 | 03:32:11.52 | -27:37:27.54 | 0.55     | 0.09±0.02         | -0.25±0.03        | --                    | --   | 2.             | 2.2 | 0.73± 0.04              | 033211-273727   | 4.5± 0.5                | 2.92                     | --               | --         | --              | --    | --                       | 1.60000       |
| 28        | 033226.9-274105 | 03:32:26.96 | -27:41: 5.72 | 0.16     | -0.12±0.01        | -0.39±0.01        | --                    | --   | 0.8            | 2.5 | 1.66± 0.03              | 033226-274105   | 22.5± 1.2               | 2.89                     | --               | --         | --              | --    | --                       | 0.73400       |



Table 4—Continued

| Src.<br># | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio    |                   | Thermal – Non thermal |      |                |     | F <sub>x</sub><br>[cgs] | Name<br>NVSS J+ | F <sub>r</sub><br>[mJy] | R <sub>Xr</sub><br>f <sub>&lt;99%</sub> | Name<br>2MASS J+ | 2MASS Mag & Colors |       |       | R <sub>xi</sub><br>f <sub>&lt;99%</sub> | Redshift<br>z |
|-----------|-----------------|-------------|--------------|----------|-------------------|-------------------|-----------------------|------|----------------|-----|-------------------------|-----------------|-------------------------|---|------------------|--------------------|-------|-------|---|---------------|
|           |                 |             |              |          | $\frac{M-S}{S+M}$ | $\frac{H-M}{H+M}$ | N <sub>H</sub>        | KT   | N <sub>H</sub> | Γ   |                         |                 |                         |   |                  | K                  | H – K | J – H |   |               |
| 40        | 071302.5+433807 | 07:13: 2.54 | +43:38: 7.40 | 2.17     | 0.73±0.26         | -0.16±0.31        | 2.                    | 2.6  | 2.             | 3.0 | 0.60± 0.34              | 071302+433807   | 43.1± 1.7               | 0.18                                    | ---              | ---                | ---   | ---   | 0.518                                   |               |
| 41        | 072132.3+312913 | 07:21:32.35 | -31:29:13.14 | 2.83     | 0.28±0.22         | -0.73±0.24        | 1.                    | 0.90 | ---            | --- | 0.11± 0.07              | 072132-312915   | 7.7± 0.5                | 0.75                                    | ---              | ---                | ---   | ---   | 0.300                                   |               |
| 42        | 072344.7+712733 | 07:23:44.75 | +71:27:33.90 | 14.62    | -0.18±0.26        | -0.25±0.30        | ---                   | ---  | 1.             | 2.0 | 2.62± 1.75              | 072344+712722   | 2.5± 0.4                | 0.71                                    | 072344+712733    | 14.18              | 0.808 | 0.760 | 0.191                                   | 2.100         |
| 43        | 074024.3+740819 | 07:40:24.35 | +74:08:19.30 | 1.09     | 0.28±0.16         | -0.02±0.15        | ---                   | ---  | 0.6            | 1.5 | 0.17± 0.06              | 074024+740820   | 60.4± 1.9               | 1.03                                    | ---              | ---                | ---   | ---   | 0.630                                   |               |
| 44        | 074226.5+493435 | 07:42:26.73 | +49:34:34.96 | 3.03     | 0.66±0.14         | -0.17±0.18        | 0.8                   | 2.0  | 1.             | 2.7 | 2.45± 0.91              | 074225+493431   | 6.7± 1.0                | 2.88                                    | ---              | ---                | ---   | ---   | 0.027                                   |               |
| 45        | 082207.2+011856 | 08:22: 7.28 | +01:18:56.54 | 2.10     | 1.00±0.42         | 0.19±0.39         | 10                    | 2.6  | 10             | 3.2 | 0.06± 0.06              | 082207+011858   | 13.5± 1.1               | 1.04                                    | ---              | ---                | ---   | ---   | 0.864                                   |               |
| 46        | 082651.4+263720 | 08:26:51.44 | +26:37:20.28 | 1.75     | 0.04±0.26         | -0.23±0.27        | ---                   | ---  | 0.4            | 2.0 | 0.07± 0.03              | 082651+263721   | 16.6± 0.6               | 0.85                                    | ---              | ---                | ---   | ---   | 0.690                                   |               |
| 47        | 083736.7-130404 | 08:37:36.70 | -13:04: 4.89 | 2.33     | -0.41±0.33        | 0.25±0.38         | ---                   | ---  | ---            | --- | 0.42± 0.30              | 083736-130403   | 11.0± 0.6               | 0.76                                    | ---              | ---                | ---   | ---   | 1.122                                   |               |
| 48        | 083754.4+244444 | 08:37:54.55 | +24:44:42.74 | 2.37     | 0.60±0.24         | 0.10±0.23         | ---                   | ---  | 6.             | 1.5 | 0.26± 0.12              | 083754+244443   | 3.1± 0.5                | 1.18                                    | ---              | ---                | ---   | ---   | 2.052                                   |               |
| 49        | 084038.7+132510 | 08:40:38.72 | +13:25:10.78 | 1.23     | 0.18±0.14         | -0.02±0.14        | ---                   | ---  | 2.             | 1.5 | 1.06± 0.37              | 084038+132513   | 16.6± 0.6               | 2.01                                    | ---              | ---                | ---   | ---   | 2.175                                   |               |
| 50        | 085045.7+110841 | 08:50:45.73 | +11:08:41.96 | 0.98     | 0.04±0.13         | -0.50±0.15        | ---                   | ---  | 6.             | 3.2 | 0.53± 0.13              | 085045+110841   | 50.4± 1.6               | 0.38                                    | 085045+110841    | 15.96              | 0.143 | 0.365 | 1.029                                   | 2.620         |
| 51        | 085448.8+200630 | 08:54:48.85 | +20:06:30.41 | 0.04     | 0.03±0.01         | -0.30±0.01        | ---                   | ---  | 0.6            | 2.2 | 39.45± 0.29             | 085448+200630   | 1511.8± 45.4            | 0.66                                    | 085448+200630    | 11.83              | 0.846 | 0.926 | 1.185                                   | 0.300         |
| 52        | 085841.4+140944 | 08:58:41.47 | +14:09:44.99 | 0.10     | 0.21±0.01         | -0.34±0.01        | ---                   | ---  | 2.             | 2.7 | 18.27± 0.45             | 085841+140943   | 2370.8± 71.1            | 2.40                                    | 085841+140944    | 15.28              | 0.730 | 0.913 | 0.880                                   | 1.043         |
| 53        | 091528.7+441633 | 09:15:28.78 | +44:16:33.56 | 0.48     | -0.04±0.07        | -0.22±0.08        | ---                   | ---  | 1.             | 2.0 | 4.18± 0.56              | 091528+441632   | 176.9± 5.9              | 2.35                                    | ---              | ---                | ---   | ---   | 1.488                                   |               |
| 54        | 094124.7+033916 | 09:41:24.75 | +03:39:16.48 | 1.56     | 0.41±0.18         | -0.43±0.18        | 2.                    | 2.6  | 4.             | 3.2 | 0.61± 0.21              | 094124+033914   | 12.3± 0.6               | 0.81                                    | ---              | ---                | ---   | ---   | 1.223                                   |               |
| 55        | 095306.4+012241 | 09:53: 6.41 | +01:22:41.31 | 1.25     | -0.04±0.16        | -0.56±0.19        | ---                   | ---  | 4.             | 3.5 | 1.18± 0.56              | 095306+012242   | 22.7± 0.8               | 1.75                                    | ---              | ---                | ---   | ---   | 1.411                                   |               |
| 56        | 095456.7+174332 | 09:54:56.80 | +17:43:32.08 | 0.11     | 0.12±0.02         | -0.26±0.02        | ---                   | ---  | 2.             | 2.2 | 9.76± 0.23              | 095456+174331   | 1158.5± 34.8            | 0.85                                    | 095456+174332    | 15.68              | -0.18 | 0.935 | 2.500                                   | 1.472         |
| 57        | 095711.1+412230 | 09:57:11.13 | +41:22:30.44 | 1.51     | 0.37±0.20         | -0.58±0.22        | ---                   | ---  | 10             | 4.0 | 0.52± 0.23              | 095711+412229   | 31.3± 1.0               | 0.72                                    | ---              | ---                | ---   | ---   | 1.727                                   |               |
| 58        | 095847.2+653355 | 09:58:47.23 | +65:33:55.69 | 0.04     | 0.22±0.01         | -0.33±0.01        | ---                   | ---  | 1.             | 2.7 | 52.61± 0.65             | 095847+653354   | 729.4± 21.9             | 1.99                                    | 095847+653355    | 12.42              | 0.861 | 0.803 | 2.194                                   | 0.368         |
| 59        | 100249.2+023746 | 10:02:49.30 | +02:37:46.06 | 1.31     | 0.21±0.11         | -0.31±0.12        | ---                   | ---  | 4.             | 2.5 | 0.21± 0.05              | 100249+023749   | 7.0± 0.5                | 2.93                                    | ---              | ---                | ---   | ---   | 2.131                                   |               |
| 60        | 101112.2+554447 | 10:11:12.29 | +55:44:47.56 | 0.18     | 0.14±0.02         | -0.28±0.03        | ---                   | ---  | 1.             | 2.2 | 2.34± 0.09              | 101112+554449   | 173.6± 6.1              | 2.71                                    | ---              | ---                | ---   | ---   | 1.240                                   |               |
| 61        | 101511.8+520707 | 10:15:11.90 | +52:07: 7.92 | 1.07     | 0.19±0.14         | -0.54±0.15        | 1.                    | 2.2  | 2.             | 3.7 | 1.70± 0.73              | 101511+520707   | 77.5± 2.4               | 0.73                                    | ---              | ---                | ---   | ---   | 0.890                                   |               |
| 62        | 101706.6+520247 | 10:17: 6.67 | +52:02:47.65 | 0.70     | -0.04±0.11        | -0.68±0.12        | 0.6                   | 1.2  | ---            | --- | 1.63± 0.48              | 101706+520247   | 39.7± 1.2               | 0.64                                    | 101706+520247    | 15.31              | 0.526 | 0.863 | 0.641                                   | 0.380         |
| 63        | 101714.0+390125 | 10:17:14.05 | +39:01:25.38 | 0.72     | -0.26±0.23        | 0.54±0.16         | ---                   | ---  | ---            | --- | 1.33± 0.14              | 101714+390124   | 1392.2± 41.8            | 1.98                                    | ---              | ---                | ---   | ---   | 0.560                                   |               |
| 64        | 102838.8-084438 | 10:28:38.81 | -08:44:38.28 | 0.13     | 0.28±0.01         | -0.18±0.01        | ---                   | ---  | 4.             | 2.0 | 15.61± 0.24             | 102838-084438   | 269.2± 8.1              | 0.53                                    | ---              | ---                | ---   | ---   | 3.420                                   |               |
| 65        | 103118.4+505336 | 10:31:18.50 | +50:53:36.61 | 0.04     | 0.03±0.00         | -0.48±0.00        | 0.4                   | 2.0  | 0.8            | 3.0 | 170.13± 0.33            | 103118+505336   | 37.5± 1.2               | 0.26                                    | 103118+505336    | 13.90              | 0.585 | 0.800 | 0.746                                   | 0.361         |
| 66        | 103154.3+141651 | 10:31:54.34 | +14:16:51.04 | 0.02     | 0.05±0.00         | -0.40±0.00        | 0.2                   | 1.8  | 0.4            | 2.7 | 370.01± 1.08            | 103154-141650   | 14.3± 0.7               | 2.73                                    | 103154-141651    | 11.16              | 1.010 | 0.587 | 1.461                                   | 0.080         |
| 67        | 103739.8-270527 | 10:37:39.82 | -27:05:27.80 | 0.31     | 0.09±0.04         | -0.24±0.05        | ---                   | ---  | 0.6            | 2.2 | 3.45± 0.23              | 103739-270525   | 218.2± 6.6              | 1.92                                    | 103739-270527    | 15.19              | 0.804 | 1.303 | 2.062                                   | 0.567         |
| 68        | 103850.8+415513 | 10:38:50.90 | +41:55:13.62 | 0.46     | -0.09±0.07        | -0.44±0.08        | ---                   | ---  | 2.             | 2.7 | 2.26± 0.35              | 103850+415516   | 6.1± 0.4                | 1.40                                    | 103850+415513    | 15.29              | 0.820 | 0.937 | 1.340                                   | 1.468         |
| 69        | 104117.1+061017 | 10:41:17.14 | +06:10:17.63 | 0.04     | 0.10±0.01         | -0.25±0.01        | ---                   | ---  | 1.             | 2.2 | 26.01± 0.22             | 104117+061016   | 1405.2± 42.2            | 1.81                                    | 104117+061017    | 15.01              | 0.599 | 0.639 | 1.825                                   | 1.270         |
| 70        | 105137.2+572942 | 10:51:37.21 | +57:29:42.09 | 3.32     | -0.32±0.74        | 0.71±0.36         | ---                   | ---  | ---            | --- | 0.08± 0.05              | 105138+572942   | 2.8± 0.5                | 2.42                                    | ---              | ---                | ---   | ---   | ---                                     |               |
| 71        | 105142.0+573554 | 10:51:42.04 | +57:35:56.59 | 1.00     | 0.10±0.05         | -0.20±0.06        | ---                   | ---  | 0.2            | 2.0 | 0.10± 0.02              | 105142+573601   | 4.8± 0.4                | 2.57                                    | ---              | ---                | ---   | ---   | ---                                     |               |
| 72        | 105237.2+573103 | 10:52:37.21 | +57:31: 2.44 | 1.68     | 0.17±0.03         | -0.33±0.03        | ---                   | ---  | 2.             | 2.5 | 0.15± 0.01              | 105237+573101   | 65.0± 2.3               | 0.42                                    | ---              | ---                | ---   | ---   | 0.708                                   |               |
| 73        | 105250.0+335505 | 10:52:50.07 | +33:55: 5.69 | 0.48     | -0.05±0.05        | -0.32±0.06        | ---                   | ---  | 1.             | 2.2 | 4.50± 0.50              | 105250+335504   | 20.6± 1.0               | 1.49                                    | 105250+335505    | 15.06              | -0.04 | 1.176 | 1.166                                   | 1.408         |
| 74        | 105255.2+571951 | 10:52:55.01 | +57:19:51.06 | 1.65     | 0.62±0.05         | -0.13±0.05        | ---                   | ---  | 6.             | 2.2 | 0.12± 0.02              | 105254+571950   | 3.5± 0.5                | 1.01                                    | ---              | ---                | ---   | ---   | 1.400                                   |               |
| 75        | 105400.3+573321 | 10:54: 0.51 | +57:33:21.72 | 0.92     | 0.63±0.04         | -0.12±0.04        | 0.6                   | 2.2  | 1.             | 2.5 | 0.26± 0.02              | 105400+573322   | 3.0± 0.4                | 0.74                                    | ---              | ---                | ---   | ---   | ---                                     |               |
| 76        | 110427.3+381231 | 11:04:27.43 | +38:12:32.66 | 0.02     | 0.01±0.00         | -0.42±0.00        | 0.1                   | 1.8  | 0.4            | 2.7 | 2930.26± 0.78           | 110427+381232   | 767.4± 28.9             | 0.37                                    | ---              | ---                | ---   | ---   | 0.030                                   |               |
| 77        | 111036.2+481752 | 11:10:36.22 | +48:17:52.75 | 0.59     | 0.10±0.07         | -0.34±0.07        | ---                   | ---  | 1.             | 2.5 | 1.57± 0.29              | 111036+481753   | 512.1± 15.4             | 2.07                                    | ---              | ---                | ---   | ---   | 0.740                                   |               |
| 78        | 111121.6+482047 | 11:11:21.64 | +48:20:47.47 | 0.26     | 0.22±0.03         | -0.23±0.03        | ---                   | ---  | 0.6            | 2.2 | 4.55± 0.29              | 111121+482047   | 15.0± 0.9               | 2.87                                    | ---              | ---                | ---   | ---   | 0.280                                   |               |
| 79        | 111547.0+430431 | 11:15:47.08 | +43:04:31.10 | 1.35     | 0.47±0.14         | -0.35±0.16        | ---                   | ---  | 4.             | 3.0 | 1.86± 0.64              | 111547+430429   | 47.4± 1.5               | 1.39                                    | ---              | ---                | ---   | ---   | 1.039                                   |               |
| 80        | 111654.7+180307 | 11:16:54.71 | +18:03: 7.24 | 0.87     | -0.27±0.03        | -0.49±0.05        | ---                   | ---  | 0.2            | 3.0 | 3.45± 0.35              | 111654+180304   | 6.9± 0.4                | 1.46                                    | 111654+180307    | 9.529              | 0.158 | 0.674 | 1.143                                   | ---           |
| 81        | 111908.6+211918 | 11:19: 8.71 | +21:19:18.38 | 0.07     | -0.15±0.00        | -0.48±0.01        | 0.01                  | 1.8  | 0.4            | 3.0 | 113.75± 0.74            | 111908+211913   | 6.1± 0.5                | 2.46                                    | 111908+211918    | 11.54              | 1.144 | 0.908 | 0.650                                   | 0.177         |
| 82        | 112338.0+052038 | 11:23:38.07 | +05:20:38.62 | 0.25     | 0.10±0.03         | -0.26±0.03        | ---                   | ---  | 4.             | 2.2 |                         |                 |                         |   |                  |                    |       |       |   |               |



Table 4—Continued

| Src.<br># | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio    |                   | Thermal – Non thermal |     |                |     | F <sub>X</sub><br>[cgs] | Name<br>NVSS J+ | F <sub>R</sub><br>[mJy] | R <sub>Xr</sub><br>f <sub>&lt;99%</sub> | Name<br>2MASS J+ | 2MASS<br>K | S Mag & Colors |       | R <sub>xi</sub><br>f <sub>&lt;99%</sub> | Redshift<br>z |
|-----------|-----------------|-------------|--------------|----------|-------------------|-------------------|-----------------------|-----|----------------|-----|-------------------------|-----------------|-------------------------|---|------------------|------------|----------------|-------|---|---------------|
|           |                 |             |              |          | $\frac{M-S}{S+M}$ | $\frac{H-M}{H+M}$ | N <sub>H</sub>        | KT  | N <sub>H</sub> | Γ   |                         |                 |                         |   |                  |            | H – K          | J – H |   |               |
| 101       | 122523.9+002333 | 12:25:23.97 | +00:23:33.91 | 1.22     | -0.15±0.15        | -0.58±0.19        | 0.4                   | 2.2 | 2.             | 3.5 | 0.49± 0.22              | 122524+002337   | 12.2± 0.6               | 2.27                                    | -- -- -- --      | --         | --             | --    | 0.970000                                |               |
| 102       | 123131.4+641418 | 12:31:31.39 | +64:14:18.91 | 0.03     | -0.09±0.00        | -0.50±0.00        | 0.1                   | 1.8 | 0.4            | 3.0 | 31.61± 0.19             | 123131+641419   | 58.0± 2.2               | 1.16                                    | 123131+641418    | 13.67      | 0.659          | 0.694 | 1.592                                   | 0.164000      |
| 103       | 123413.4+475352 | 12:34:13.43 | +47:53:52.52 | 0.37     | 0.15±0.07         | -0.49±0.07        | 0.6                   | 1.8 | 1.             | 3.2 | 11.21± 1.17             | 123413+475351   | 355.9± 10.7             | 0.95                                    | 123413+475352    | 14.49      | 0.594          | 0.346 | 1.520                                   | 0.375000      |
| 104       | 123545.2-033615 | 12:35:45.28 | -03:36:15.56 | 1.31     | 0.33±0.19         | -0.19±0.19        | --                    | --  | 4.             | 2.0 | 0.51± 0.26              | 123545-033611   | 11.3± 0.5               | 2.30                                    | -- -- -- --      | --         | --             | --    | --                                      | 2.375100      |
| 105       | 123820.3+175038 | 12:38:20.34 | +17:50:38.08 | 1.33     | -0.07±0.20        | -0.18±0.24        | --                    | --  | 0.2            | 1.7 | 0.11± 0.04              | 123820+175041   | 5.6± 0.4                | 1.24                                    | 123820+175038    | 12.96      | 1.332          | 1.047 | 1.749                                   | 0.449000      |
| 106       | 124903.4-061046 | 12:49: 3.49 | -06:10:46.51 | 0.22     | -0.07±0.02        | -0.40±0.02        | --                    | --  | 0.4            | 2.5 | 2.87± 0.12              | 124903-061043   | 12.6± 0.6               | 2.15                                    | -- -- -- --      | --         | --             | --    | --                                      | 0.610000      |
| 107       | 125731.9+241241 | 12:57:31.94 | +24:12:41.12 | 0.07     | 0.10±0.01         | -0.39±0.01        | 0.2                   | 2.0 | 0.6            | 2.7 | 124.25± 1.80            | 125731+241238   | 14.0± 0.9               | 1.23                                    | 125731+241241    | 14.22      | 0.470          | 0.823 | 0.944                                   | 0.140700      |
| 108       | 125805.3+014339 | 12:58: 5.32 | +01:43:39.75 | 1.82     | 0.01±0.20         | -0.40±0.23        | --                    | --  | 1.             | 2.7 | 0.53± 0.22              | 125805+014339   | 6.0± 0.4                | 1.79                                    | -- -- -- --      | --         | --             | --    | --                                      | 1.049800      |
| 109       | 125810.8+014343 | 12:58:10.82 | +01:43:44.00 | 1.50     | -0.08±0.25        | -0.15±0.29        | --                    | --  | 1.             | 1.7 | 0.39± 0.25              | 125810+014345   | 24.3± 0.8               | 1.45                                    | -- -- -- --      | --         | --             | --    | --                                      | 2.568600      |
| 110       | 130120.0+282137 | 13:01:20.10 | +28:21:37.60 | 0.17     | -0.01±0.01        | -0.34±0.01        | --                    | --  | 2.             | 2.5 | 4.55± 0.11              | 130120+282137   | 100.7± 3.0              | 2.07                                    | -- -- -- --      | --         | --             | --    | --                                      | 1.373000      |
| 111       | 131028.6+322044 | 13:10:28.65 | +32:20:44.18 | 0.03     | 0.07±0.00         | -0.30±0.00        | --                    | --  | 1.             | 2.2 | 64.31± 0.43             | 131028+322044   | 1686.6± 50.6            | 1.75                                    | 131028+322044    | 14.69      | 0.842          | 0.797 | 1.838                                   | 0.997000      |
| 112       | 131055.5-012723 | 13:10:55.59 | -01:27:23.34 | 0.50     | -0.15±0.08        | -0.33±0.10        | --                    | --  | 0.6            | 2.2 | 0.40± 0.10              | 131055-012726   | 4.9± 0.5                | 1.32                                    | -- -- -- --      | --         | --             | --    | --                                      | 1.004000      |
| 113       | 131938.7-004940 | 13:19:38.76 | -00:49:40.00 | 0.12     | 0.02±0.02         | -0.29±0.02        | --                    | --  | 1.             | 2.2 | 12.02± 0.34             | 131938-004940   | 1468.9± 44.1            | 1.79                                    | 131938+004940    | 15.18      | 0.731          | 0.209 | 1.896                                   | 0.870000      |
| 114       | 132033.2+331143 | 13:20:33.22 | +33:11:43.15 | 0.30     | 0.18±0.05         | -0.19±0.05        | --                    | --  | 1.             | 2.0 | 2.07± 0.14              | 132033+331142   | 25.8± 0.9               | 2.96                                    | -- -- -- --      | --         | --             | --    | --                                      | 0.924000      |
| 115       | 132830.8+470356 | 13:28:30.88 | +47:03:56.10 | 2.08     | 0.01±0.11         | -0.41±0.14        | --                    | --  | 2.             | 2.7 | 1.47± 0.59              | 132831+470403   | 3.1± 0.5                | 0.94                                    | -- -- -- --      | --         | --             | --    | --                                      | 1.545000      |
| 116       | 132833.6+114519 | 13:28:33.62 | +11:45:19.65 | 0.09     | -0.12±0.01        | -0.48±0.01        | 0.1                   | 2.2 | 0.6            | 3.0 | 46.46± 0.90             | 132833+114521   | 2.4± 0.5                | 1.16                                    | -- -- -- --      | --         | --             | --    | --                                      | 0.490000      |
| 117       | 133232.6+111224 | 13:32:32.60 | +11:12:24.89 | 0.83     | 0.07±0.11         | -0.35±0.12        | 0.2                   | 2.0 | 0.4            | 2.5 | 0.85± 0.17              | 133232+111222   | 26.0± 0.9               | 1.82                                    | -- -- -- --      | --         | --             | --    | --                                      | --            |
| 118       | 133718.6+242303 | 13:37:18.70 | +24:23: 3.33 | 0.04     | -0.23±0.01        | -0.36±0.01        | --                    | --  | 0.1            | 2.2 | 86.30± 0.68             | 133718+242302   | 19.6± 0.7               | 1.48                                    | 133718+242303    | 10.49      | 1.289          | 1.010 | 0.778                                   | 0.107000      |
| 119       | 133739.8-125725 | 13:37:39.80 | -12:57:25.75 | 0.05     | 0.11±0.01         | -0.31±0.01        | --                    | --  | 0.8            | 2.5 | 51.97± 0.55             | 133739-125724   | 2676.3± 80.3            | 1.94                                    | -- -- -- --      | --         | --             | --    | --                                      | 0.539000      |
| 120       | 133807.4+280508 | 13:38: 7.49 | +28:05: 8.53 | 0.38     | 0.34±0.05         | -0.09±0.05        | --                    | --  | 2.             | 1.7 | 1.85± 0.14              | 133807+280509   | 166.6± 5.0              | 1.07                                    | -- -- -- --      | --         | --             | --    | --                                      | 1.086000      |
| 121       | 134133.1+353252 | 13:41:33.14 | +35:32:52.35 | 0.22     | -0.02±0.03        | -0.40±0.03        | --                    | --  | 1.             | 2.7 | 4.91± 0.28              | 134133+353253   | 76.8± 2.8               | 1.85                                    | -- -- -- --      | --         | --             | --    | --                                      | 0.780000      |
| 122       | 134133.4-002433 | 13:41:33.40 | -00:24:33.86 | 2.21     | -0.72±0.21        | 0.11±0.39         | --                    | --  | --             | --  | 0.21± 0.11              | 134133-002432   | 3.4± 0.5                | 1.35                                    | 134133+002433    | 14.00      | 0.466          | 0.613 | 0.815                                   | 0.071700      |
| 123       | 134232.4-003151 | 13:42:32.44 | -00:31:51.83 | 1.28     | -0.35±0.17        | -0.27±0.26        | --                    | --  | --             | --  | 0.97± 0.63              | 134232-003154   | 2.2± 0.4                | 1.23                                    | -- -- -- --      | --         | --             | --    | --                                      | 1.209000      |
| 124       | 134252.9+403202 | 13:42:52.93 | +40:32: 2.08 | 0.13     | 0.04±0.02         | -0.26±0.03        | --                    | --  | 1.             | 2.2 | 3.41± 0.12              | 134252+403201   | 151.6± 4.6              | 1.90                                    | -- -- -- --      | --         | --             | --    | --                                      | 0.910000      |
| 125       | 134414.1+001642 | 13:44:14.13 | +00:16:42.50 | 0.30     | 0.05±0.04         | -0.30±0.04        | --                    | --  | 0.6            | 2.2 | 12.62± 0.98             | 134414+001643   | 114.2± 4.2              | 2.48                                    | -- -- -- --      | --         | --             | --    | --                                      | 0.452000      |
| 126       | 134740.9+581242 | 13:47:40.97 | +58:12:42.99 | 0.12     | 0.01±0.02         | -0.36±0.02        | --                    | --  | 4.             | 2.5 | 3.94± 0.10              | 134740+581242   | 641.9± 22.7             | 0.35                                    | -- -- -- --      | --         | --             | --    | --                                      | 2.039000      |
| 127       | 140700.4+282714 | 14:07: 0.41 | +28:27:14.37 | 0.26     | 0.17±0.04         | -0.22±0.04        | 0.2                   | 2.6 | 0.4            | 2.2 | 4.71± 0.21              | 140700+282714   | 816.6± 24.5             | 0.71                                    | 140700+282714    | 11.94      | 1.062          | 0.860 | 0.610                                   | 0.065760      |
| 128       | 140856.4-075225 | 14:08:56.45 | -07:52:26.28 | 0.17     | 0.13±0.02         | -0.25±0.02        | --                    | --  | 2.             | 2.2 | 7.18± 0.20              | 140856-075226   | 688.2± 24.1             | 0.51                                    | 140856-075226    | 15.18      | 0.542          | 1.291 | 0.864                                   | 1.493500      |
| 129       | 140923.9+261820 | 14:09:23.91 | +26:18:21.01 | 0.04     | -0.19±0.00        | -0.49±0.00        | --                    | --  | 1.             | 3.0 | 31.50± 0.14             | 140923+261822   | 9.1± 0.5                | 1.92                                    | 140923+261821    | 13.90      | 0.601          | 0.396 | 0.527                                   | 0.940000      |
| 130       | 141617.2+264903 | 14:16:17.29 | +26:49: 3.39 | 1.70     | -0.13±0.18        | -0.73±0.25        | 2.                    | 2.2 | --             | --  | 0.45± 0.28              | 141617+264906   | 3.0± 0.4                | 0.50                                    | 141617+264903    | 14.83      | 0.840          | 0.711 | 1.647                                   | 2.292800      |
| 131       | 141655.6+445453 | 14:16:55.65 | +44:54:53.28 | 0.56     | 0.40±0.07         | -0.31±0.07        | 0.8                   | 2.6 | 1.             | 2.7 | 0.96± 0.10              | 141655+445449   | 2.8± 0.5                | 0.62                                    | -- -- -- --      | --         | --             | --    | --                                      | 0.579000      |
| 132       | 141730.4+264457 | 14:17:30.41 | +26:44:57.41 | 0.34     | -0.01±0.05        | -0.35±0.06        | --                    | --  | 2.             | 2.5 | 1.52± 0.14              | 141730+264456   | 75.6± 2.3               | 0.99                                    | -- -- -- --      | --         | --             | --    | --                                      | 1.455000      |
| 133       | 142414.0+421400 | 14:24:14.13 | +42:14: 0.54 | 0.63     | -0.02±0.06        | -0.32±0.07        | --                    | --  | 2.             | 2.2 | 1.62± 0.17              | 142414+421401   | 308.7± 9.3              | 2.38                                    | -- -- -- --      | --         | --             | --    | --                                      | 1.608000      |
| 134       | 142437.9+225602 | 14:24:37.95 | +22:56: 2.62 | 0.82     | 0.34±0.11         | -0.21±0.11        | --                    | --  | 6.             | 2.2 | 16.21± 3.17             | 142438+225600   | 267.9± 8.0              | 2.31                                    | 142437+225602    | 12.66      | 0.650          | 0.566 | 2.263                                   | 3.620000      |
| 135       | 143023.7+420436 | 14:30:23.71 | +42:04:36.72 | 0.08     | 0.11±0.01         | -0.29±0.01        | --                    | --  | 4.             | 2.2 | 21.12± 0.24             | 143023+420436   | 210.6± 6.3              | 0.73                                    | -- -- -- --      | --         | --             | --    | --                                      | 4.715000      |
| 136       | 145147.0-151220 | 14:51:47.07 | -15:12:20.48 | 0.36     | 0.16±0.03         | -0.32±0.03        | --                    | --  | 4.             | 2.5 | 2.36± 0.11              | 145147-151219   | 28.5± 1.0               | 1.65                                    | 145147-151220    | 14.69      | 0.585          | 1.104 | 0.963                                   | 4.763000      |
| 137       | 150424.9+102938 | 15:04:25.00 | +10:29:37.40 | 0.54     | 0.18±0.03         | -0.22±0.03        | --                    | --  | 4.             | 2.0 | 10.80± 0.49             | 150425+102938   | 1774.2± 53.2            | 1.42                                    | 150425+102937    | 14.29      | 0.971          | 0.898 | 2.610                                   | 1.839000      |
| 138       | 150837.6+671634 | 15:08:37.62 | +67:16:34.89 | 0.88     | 0.28±0.10         | -0.34±0.11        | --                    | --  | 2.             | 2.7 | 0.75± 0.15              | 150838+671637   | 7.8± 0.4                | 2.78                                    | -- -- -- --      | --         | --             | --    | --                                      | 1.219000      |
| 139       | 151002.9+570243 | 15:10: 2.97 | +57:02:43.62 | 0.19     | 0.10±0.03         | -0.27±0.03        | --                    | --  | 4.             | 2.2 | 6.58± 0.25              | 151002+570243   | 202.0± 6.1              | 1.42                                    | -- -- -- --      | --         | --             | --    | --                                      | 4.301000      |
| 140       | 151630.2-005625 | 15:16:30.25 | -00:56:25.34 | 0.61     | 0.56±0.07         | -0.34±0.06        | --                    | --  | 10             | 3.0 | 0.52± 0.05              | 151630-005626   | 25.8± 0.9               | 1.90                                    | 151630+005625    | 16.15      | 0.612          | 0.396 | 1.189                                   | 1.921400      |
| 141       | 153202.2+301629 | 15:32: 2.27 | +30:16:29.11 | 0.08     | -0.11±0.01        | -0.53±0.01        | 0.1                   | 1.4 | 0.4            | 3.2 | 45.19± 0.77</           |                 |                         |   |                  |            |                |       |   |               |



Table 4—Continued

| Src.<br># | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio    |                   | Thermal – Non thermal |      |                |     | F <sub>x</sub><br>[cgs] | Name<br>NVSS J+ | F <sub>r</sub><br>[mJy] | R <sub>xr</sub><br>f<99% | Name<br>2MASS J+ | 2MASS<br>K | SS Mag & Colors |       | R <sub>xi</sub><br>f<99% | Redshift<br>z |
|-----------|-----------------|-------------|--------------|----------|-------------------|-------------------|-----------------------|------|----------------|-----|-------------------------|-----------------|-------------------------|--------------------------|------------------|------------|-----------------|-------|--------------------------|---------------|
|           |                 |             |              |          | $\frac{M-S}{S+M}$ | $\frac{H-M}{H+M}$ | N <sub>H</sub>        | KT   | N <sub>H</sub> | Γ   |                         |                 |                         |                          |                  |            | H – K           | J – H |                          |               |
| 162       | 212439.3+505826 | 21:24:39.14 | +50:58:25.79 | 0.13     | 0.92±0.00         | 0.47±0.00         | --                    | --   | 2.             | 1.2 | 605.80± 1.61            | 212439+505823   | 381.5± 12.9             | 1.99                     | 212439+505825    | 11.36      | 1.012           | 0.893 | 1.785                    | 0.02000       |
| 163       | 212912.1-153840 | 21:29:12.19 | -15:38:40.90 | 0.03     | 0.29±0.00         | -0.18±0.00        | --                    | --   | 4.             | 2.0 | 140.36± 0.83            | 212912-153841   | 589.7± 17.7             | 1.82                     | 212912-153840    | 14.22      | 0.695           | 0.506 | 0.942                    | 2.72700       |
| 164       | 213348.5-004150 | 21:33:48.52 | -00:41:50.51 | 0.85     | 0.13±0.12         | -0.43±0.13        | --                    | --   | 4.             | 3.0 | 0.95± 0.26              | 213348-004147   | 34.6± 1.5               | 2.86                     | -- -- -- --      | --         | --              | --    | --                       | 1.63000       |
| 165       | 215121.9-274221 | 21:51:21.92 | -27:42:21.66 | 0.45     | 0.24±0.06         | -0.28±0.06        | --                    | --   | 4.             | 2.5 | 12.61± 1.43             | 215121-274223   | 314.7± 9.5              | 2.49                     | 215121-274221    | 14.38      | 1.016           | 0.851 | 2.042                    | 1.48000       |
| 166       | 215155.5-302753 | 21:51:55.56 | -30:27:53.50 | 0.04     | 0.16±0.00         | -0.22±0.00        | --                    | --   | 4.             | 2.0 | 90.97± 0.59             | 215155-302753   | 1243.2± 37.3            | 0.56                     | 215155-302753    | 14.95      | 0.770           | 0.788 | 1.942                    | 2.34499       |
| 167       | 215852.0-301332 | 21:58:52.12 | -30:13:30.67 | 0.01     | -0.06±0.00        | -0.55±0.00        | 0.2                   | 1.4  | 0.6            | 3.2 | 1090.28± 0.39           | 215852-301330   | 489.3± 19.0             | 0.41                     | 215852-301330    | 10.13      | 0.621           | 0.643 | 1.674                    | 0.11700       |
| 168       | 224050.9+032309 | 22:40:50.93 | +03:23: 9.57 | 0.53     | -0.07±0.07        | -0.63±0.09        | 0.2                   | 1.0  | 0.4            | 3.7 | 0.37± 0.05              | 224050+032308   | 19.5± 0.7               | 1.44                     | 224050+032309    | 14.54      | 0.413           | 0.837 | 1.063                    | -- --         |
| 169       | 225134.6+184839 | 22:51:34.64 | +18:48:39.72 | 0.27     | 0.13±0.04         | -0.29±0.05        | --                    | --   | 4.             | 2.2 | 3.35± 0.24              | 225134+184840   | 2133.0± 64.0            | 1.42                     | -- -- -- --      | --         | --              | --    | --                       | 1.75800       |
| 170       | 230315.6+085226 | 23:03:15.62 | +08:52:26.28 | 0.01     | 0.09±0.00         | -0.35±0.00        | 0.2                   | 2.0  | 0.4            | 2.7 | 531.14± 1.45            | 230315+085226   | 180.5± 5.4              | 0.59                     | 230315+085226    | 9.762      | 0.920           | 0.717 | 1.140                    | 0.01340       |
| 171       | 231856.6+001437 | 23:18:56.64 | +00:14:36.75 | 0.04     | -0.00±0.00        | -0.41±0.00        | 0.1                   | 1.8  | 0.4            | 2.7 | 459.73± 3.29            | 231856+001437   | 24.4± 0.8               | 1.66                     | -- -- -- --      | --         | --              | --    | --                       | 0.02929       |
| 172       | 233822.3+001148 | 23:38:22.34 | +00:11:48.96 | 1.44     | -0.07±0.15        | -0.65±0.18        | 0.2                   | 0.90 | --             | --  | 0.18± 0.13              | 233822+001145   | 21.8± 0.8               | 2.17                     | -- -- -- --      | --         | --              | --    | --                       | -- --         |
| 173       | 235139.4-260502 | 23:51:39.41 | -26:05: 2.62 | 0.12     | 0.11±0.00         | -0.33±0.00        | 0.2                   | 2.4  | 0.4            | 2.5 | 161.49± 0.88            | 235139-260502   | 19.4± 1.0               | 1.33                     | -- -- -- --      | --         | --              | --    | --                       | 0.23000       |
| 174       | 235430.1-151310 | 23:54:30.17 | -15:13:10.46 | 0.07     | 0.12±0.01         | -0.26±0.01        | --                    | --   | 4.             | 2.2 | 13.06± 0.20             | 235430-151311   | 864.7± 25.9             | 0.93                     | -- -- -- --      | --         | --              | --    | --                       | 2.67500       |
| 175       | 235907.7-303739 | 23:59: 7.73 | -30:37:39.83 | 0.05     | 0.08±0.01         | -0.43±0.01        | 0.2                   | 1.8  | 0.6            | 3.0 | 257.75± 2.01            | 235907-303740   | 62.1± 2.3               | 2.18                     | 235907-303739    | 14.03      | 0.680           | 0.613 | 2.507                    | 0.16710       |



Table 5 SUMSS/XMM: Galactic objects

| Src.<br>#                    | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio    |                   | Thermal – Non thermal |      |                |     | F <sub>x</sub><br>[cgs] | Name<br>SUMMS J+ | S <sub>t</sub><br>[mJy] | S <sub>p</sub><br>[mJy] | R <sub>xr</sub><br>f <sub>&lt;99%</sub> | Name<br>2MASS J+ | 2MASS<br>K | Mag & Colors |       | R <sub>xi</sub><br>f <sub>&lt;99%</sub> | Bib.<br>Ref. |
|------------------------------|-----------------|-------------|--------------|----------|-------------------|-------------------|-----------------------|------|----------------|-----|-------------------------|------------------|-------------------------|-------------------------|---|------------------|------------|--------------|-------|---|--------------|
|                              |                 |             |              |          | $\frac{M-S}{M+M}$ | $\frac{H-M}{H+M}$ | N <sub>H</sub>        | KT   | N <sub>H</sub> | Γ   |                         |                  |                         |                         |   |                  |            | H – K        | J – H |   |              |
| Stars                        |                 |             |              |          |                   |                   |                       |      |                |     |                         |                  |                         |                         |   |                  |            |              |       |   |              |
| 1                            | 023917.9-341654 | 02:39:17.93 | -34:16:54.02 | 2.20     | -0.18±0.08        | -0.41±0.12        | 0.                    | 1.8  | 0.2            | 2.7 | 0.54± 0.21              | 023917-341654    | 1.7                     | 23.3                    | 1.78                                    | 023917-341654    | 15.72      | 0.163        | 0.540 | 2.09                                    | 416          |
| 2                            | 045818.0-751637 | 04:58:18.03 | -75:16:37.90 | 0.03     | 0.24±0.00         | -0.49±0.00        | 0.4                   | 1.2  | 0.6            | 3.5 | 134.56± 0.44            | 045818-751637    | 1.4                     | 8.8                     | 1.33                                    | 045818-751637    | 5.287      | 0.194        | 0.557 | 1.27                                    | 433          |
| 3                            | 111058.4-761759 | 11:10:58.45 | -76:17:59.26 | 1.26     | 0.01±0.07         | -0.30±0.09        | 0.1                   | 2.0  | 0.2            | 2.5 | 0.23± 0.04              | 111058-761759    | 3.7                     | 113.7                   | 2.89                                    | 111058-761759    | 14.44      | 0.792        | 0.922 | 1.02                                    | 64           |
| 4                            | 125701.0-764832 | 12:57: 1.01 | -76:48:32.77 | 1.52     | 0.63±0.17         | -0.00±0.18        | 0.6                   | 2.6  | 0.6            | 2.0 | 0.12± 0.05              | 125701-764832    | 1.2                     | 7.8                     | 2.30                                    | — — — — —        | —          | —            | —     | —                                       | 346          |
| 5                            | 155702.2-380219 | 15:57: 2.25 | -38:02:19.39 | 0.65     | 0.48±0.06         | -0.16±0.06        | 0.4                   | 2.2  | 0.6            | 2.2 | 3.32± 0.37              | 155702-380219    | 2.2                     | 64.3                    | 0.98                                    | — — — — —        | —          | —            | —     | —                                       | 236          |
| 6                            | 201702.3-704517 | 20:17: 2.34 | -70:45:17.10 | 4.98     | -0.68±0.14        | -0.78±0.50        | —                     | —    | —              | —   | 0.39± 0.26              | 201702-704517    | 1.3                     | 13.9                    | 2.69                                    | — — — — —        | —          | —            | —     | —                                       | 20           |
| Pulsars                      |                 |             |              |          |                   |                   |                       |      |                |     |                         |                  |                         |                         |   |                  |            |              |       |   |              |
| 1                            | 043715.8-471508 | 04:37:15.89 | -47:15: 8.95 | 0.06     | -0.12±0.01        | -0.78±0.01        | 0.2                   | 0.60 | —              | —   | 10.98± 0.10             | 043715-471508    | 7.3                     | 238.7                   | 1.43                                    | — — — — —        | —          | —            | —     | —                                       | 330          |
| 2                            | 212443.8-335843 | 21:24:43.82 | -33:58:43.76 | 0.21     | -0.04±0.03        | -0.73±0.03        | 0.2                   | 0.70 | —              | —   | 1.04± 0.05              | 212443-335843    | 1.6                     | 19.3                    | 0.95                                    | — — — — —        | —          | —            | —     | —                                       | 199          |
| Supernova Remnants (SNR)     |                 |             |              |          |                   |                   |                       |      |                |     |                         |                  |                         |                         |   |                  |            |              |       |   |              |
| 1                            | 010315.1-720940 | 01:03:15.34 | -72:09:41.92 | 4.65     | -0.81±0.07        | -0.73±0.24        | —                     | —    | —              | —   | 0.35± 0.12              | 010315-720941    | 1.7                     | 37.9                    | 1.75                                    | 010315-720941    | 13.11      | 0.109        | 0.835 | 0.57                                    | 504          |
| 2                            | 031738.5-663304 | 03:17:38.41 | -66:33: 4.71 | 0.25     | 0.05±0.01         | -0.53±0.01        | 0.2                   | 1.2  | 0.4            | 3.5 | 8.88± 0.09              | 031738-663304    | 3.2                     | 103.7                   | 1.53                                    | — — — — —        | —          | —            | —     | —                                       | 382          |
| 3                            | 050554.3-680150 | 05:05:54.35 | -68:01:50.08 | 0.11     | -0.62±0.00        | -0.89±0.00        | 0.                    | 0.50 | —              | —   | 123.56± 0.21            | 050554-680150    | 6.3                     | 206.8                   | 0.61                                    | — — — — —        | —          | —            | —     | —                                       | 138          |
| 4                            | 050930.7-673119 | 05:09:30.71 | -67:31:19.13 | 0.02     | -0.62±0.00        | -0.76±0.00        | —                     | —    | —              | —   | 68.84± 0.18             | 050930-673119    | 3.1                     | 96.6                    | 1.01                                    | — — — — —        | —          | —            | —     | —                                       | 11           |
| 5                            | 051934.4-690206 | 05:19:34.50 | -69:02: 7.83 | 0.02     | -0.43±0.00        | -0.81±0.00        | 0.1                   | 0.60 | —              | —   | 164.99± 0.30            | 051934-690207    | 3.8                     | 121.7                   | 0.78                                    | — — — — —        | —          | —            | —     | —                                       | 460          |
| 6                            | 052502.9-693841 | 05:25: 2.35 | -69:38:39.42 | 0.07     | -0.38±0.00        | -0.82±0.00        | 0.1                   | 0.60 | —              | —   | 1859.89± 0.47           | 052502-693839    | 59.8                    | 1992.0                  | 0.40                                    | — — — — —        | —          | —            | —     | —                                       | 41           |
| 7                            | 052600.6-660456 | 05:26: 0.62 | -66:04:57.17 | 0.32     | -0.39±0.00        | -0.81±0.00        | 0.1                   | 0.60 | —              | —   | 332.96± 1.75            | 052600-660457    | 26.4                    | 879.0                   | 2.91                                    | — — — — —        | —          | —            | —     | —                                       | 460          |
| Low/High mass X-ray binaries |                 |             |              |          |                   |                   |                       |      |                |     |                         |                  |                         |                         |   |                  |            |              |       |   |              |
| 1                            | 023359.3-434213 | 02:33:59.32 | -43:42:13.91 | 1.04     | 0.57±0.12         | -0.47±0.12        | 0.6                   | 0.90 | —              | —   | 0.12± 0.04              | 023359-434213    | 2.3                     | 71.1                    | 2.32                                    | — — — — —        | —          | —            | —     | —                                       | 414          |
| 2                            | 051832.4-693520 | 05:18:32.40 | -69:35:21.92 | 0.81     | 0.50±0.08         | -0.15±0.07        | 0.4                   | 2.2  | 0.6            | 2.2 | 0.72± 0.12              | 051832-693521    | 16.6                    | 551.2                   | 0.92                                    | — — — — —        | —          | —            | —     | —                                       | 405          |
| 3                            | 052847.4-653956 | 05:28:48.05 | -65:39:57.57 | 1.27     | 0.24±0.02         | -0.25±0.02        | 0.2                   | 2.0  | 0.4            | 2.5 | 4.26± 0.16              | 052848-653957    | 2.1                     | 60.7                    | 1.19                                    | — — — — —        | —          | —            | —     | —                                       | 405          |
| Young Stellar Objects (YSO)  |                 |             |              |          |                   |                   |                       |      |                |     |                         |                  |                         |                         |   |                  |            |              |       |   |              |
| 1                            | 110513.8-772101 | 11:05:13.87 | -77:21: 1.78 | 1.14     | 0.92±0.12         | 0.08±0.15         | 1.                    | 1.6  | 2.             | 3.0 | 0.24± 0.09              | 110513-772101    | 2.0                     | 50.1                    | 0.43                                    | — — — — —        | —          | —            | —     | —                                       | 255          |
| Young Open Clusters          |                 |             |              |          |                   |                   |                       |      |                |     |                         |                  |                         |                         |   |                  |            |              |       |   |              |
| 1                            | 075940.8-604525 | 07:59:40.87 | -60:45:26.22 | 1.55     | 0.40±0.08         | -0.44±0.09        | 0.4                   | 1.2  | 0.8            | 3.5 | 0.21± 0.05              | 075940-604526    | 1.5                     | 40.7                    | 0.89                                    | — — — — —        | —          | —            | —     | —                                       | 344          |
| Gamma-ray sources            |                 |             |              |          |                   |                   |                       |      |                |     |                         |                  |                         |                         |   |                  |            |              |       |   |              |
| 1                            | 061547.3-333342 | 06:15:47.35 | -33:33:42.04 | 1.52     | 0.33±0.23         | -0.32±0.21        | 0.4                   | 1.6  | 0.6            | 2.7 | 0.34± 0.17              | 061547-333342    | 1.5                     | 12.4                    | 0.47                                    | — — — — —        | —          | —            | —     | —                                       | 242          |



Table 6 SUMSS/XMM: Extragalactic objects

| Src.<br>#       | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio    |                   | Thermal – Non thermal |      |                |     | F <sub>x</sub><br>[cgs] | Name<br>SUMMS J+ | S <sub>t</sub><br>[mJy] | S <sub>p</sub><br>[mJy] | R <sub>xr</sub><br>f <sub>&lt;99%</sub> | Name<br>2MASS J+ | 2MASS | Mag & Colors |       | R <sub>xi</sub><br>f <sub>&lt;99%</sub> | Redshift<br>z |  |  |  |  |
|-----------------|-----------------|-------------|--------------|----------|-------------------|-------------------|-----------------------|------|----------------|-----|-------------------------|------------------|-------------------------|-------------------------|---|------------------|-------|--------------|-------|---|---------------|--|--|--|--|
|                 |                 |             |              |          | $\frac{M-S}{S+M}$ | $\frac{H-M}{H+M}$ | N <sub>H</sub>        | KT   | N <sub>H</sub> | Γ   |                         |                  |                         |                         |   |                  | K     | H – K        | J – H |   |               |  |  |  |  |
| Normal galaxies |                 |             |              |          |                   |                   |                       |      |                |     |                         |                  |                         |                         |   |                  |       |              |       |   |               |  |  |  |  |
| 1               | 000935.5-321636 | 00:09:35.58 | -32:16:36.93 | 0.11     | -0.27±0.01        | -0.48±0.02        | 0.4                   | 1.0  | 0.6            | 3.7 | 7.21± 0.15              | 000935-321636    | 13.7                    | 453.6                   | 1.36                                    | 000935-321636    | 11.55 | 0.384        | 0.747 | 1.008                                   | 0.025628      |  |  |  |  |
| 2               | 002124.5-483954 | 00:21:24.53 | -48:39:54.85 | 0.39     | -0.40±0.04        | -0.69±0.07        | 0.1                   | 1.6  | 0.4            | 3.0 | 0.59± 0.06              | 002124-483954    | 1.5                     | 21.8                    | 1.18                                    | ---              | ---   | ---          | ---   | 0.012838                                |               |  |  |  |  |
| 3               | 002131.7-483729 | 00:21:31.70 | -48:37:29.11 | 0.17     | 0.13±0.02         | -0.44±0.02        | ---                   | ---  | ---            | --- | 2.69± 0.09              | 002131-483729    | 7.4                     | 243.8                   | 0.45                                    | 002131-483729    | 10.57 | 0.837        | 0.971 | 1.514                                   | ---           |  |  |  |  |
| 4               | 002238.2-483444 | 00:22:38.25 | -48:34:44.21 | 2.25     | -0.23±0.17        | -0.65±0.27        | ---                   | ---  | ---            | --- | 0.12± 0.10              | 002238-483444    | 1.0                     | 10.8                    | 2.08                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 5               | 003652.3-333318 | 00:36:52.32 | -33:33:18.34 | 0.45     | 0.03±0.06         | -0.44±0.07        | ---                   | ---  | 2.             | 1.5 | 2.21± 0.39              | 003652-333318    | 2.1                     | 33.4                    | 1.94                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 6               | 005353.2-374026 | 00:53:53.30 | -37:40:24.15 | 1.43     | -0.01±0.10        | -0.12±0.11        | 0.6                   | 1.0  | 0.8            | 3.7 | 0.15± 0.04              | 005353-374024    | 6.7                     | 215.4                   | 0.55                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 7               | 005403.5-374640 | 00:54: 3.52 | -37:46:40.04 | 2.16     | -0.55±0.31        | -1.00±0.38        | ---                   | ---  | ---            | --- | 0.19± 0.19              | 005403-374640    | 8.9                     | 290.6                   | 0.77                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 8               | 005652.6-712301 | 00:56:52.66 | -71:23: 1.15 | 1.64     | 0.36±0.19         | -0.87±0.18        | ---                   | ---  | 0.1            | 2.0 | 0.20± 0.16              | 005652-712301    | 3.8                     | 124.1                   | 1.51                                    | ---              | ---   | ---          | ---   | 0.01                                    |               |  |  |  |  |
| 9               | 005816.7-721806 | 00:58:16.90 | -72:18: 7.71 | 0.37     | 0.32±0.03         | -0.28±0.03        | ---                   | ---  | 0.01           | 1.7 | 2.97± 0.16              | 005816-721807    | 1.6                     | 28.2                    | 3.00                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 10              | 005820.2-713039 | 00:58:20.18 | -71:30:39.80 | 1.97     | 0.77±0.22         | 0.38±0.17         | ---                   | ---  | ---            | --- | 0.77± 0.33              | 005820-713039    | 1.8                     | 50.3                    | 1.18                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 11              | 005823.9-720033 | 00:58:23.93 | -72:00:33.81 | 7.15     | 0.33±0.14         | -0.74±0.11        | 0.2                   | 2.0  | 0.4            | 2.5 | 1.28± 0.57              | 005823-720033    | 1.3                     | 17.9                    | 1.46                                    | 005823-720033    | 15.18 | 0.191        | 0.910 | 1.691                                   | ---           |  |  |  |  |
| 12              | 010321.1-721344 | 01:03:21.14 | -72:13:47.38 | 2.21     | 0.97±0.14         | 0.55±0.11         | ---                   | ---  | ---            | --- | 0.31± 0.07              | 010321-721347    | 1.2                     | 16.6                    | 0.65                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 13              | 010402.1-720152 | 01:04: 1.90 | -72:01:51.92 | 0.15     | -0.52±0.00        | -0.92±0.00        | ---                   | ---  | 0.01           | 2.7 | 255.67± 0.12            | 010401-720151    | 8.9                     | 294.9                   | 2.01                                    | ---              | ---   | ---          | ---   | 0.01                                    |               |  |  |  |  |
| 14              | 010533.0-721330 | 01:05:32.53 | -72:13:32.01 | 0.83     | 0.28±0.02         | -0.48±0.02        | 0.1                   | 2.0  | 0.2            | 2.5 | 0.87± 0.07              | 010532-721332    | 1.1                     | 18.5                    | 2.45                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 15              | 010539.7-720353 | 01:05:39.71 | -72:03:53.19 | 4.52     | -0.81±0.32        | -0.73±0.41        | ---                   | ---  | ---            | --- | 0.29± 0.17              | 010539-720353    | 1.1                     | 7.7                     | 1.10                                    | 010539-720353    | 14.01 | 0.118        | 0.692 | 2.313                                   | ---           |  |  |  |  |
| 16              | 010700.8-801828 | 01:07: 0.81 | -80:18:28.72 | 1.56     | -0.21±0.08        | -0.06±0.10        | 0.                    | 0.40 | ---            | --- | 0.74± 0.10              | 010700-801828    | 1.2                     | 22.4                    | 2.62                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 17              | 011405.3-732007 | 01:14: 5.47 | -73:20: 7.85 | 0.43     | 0.61±0.05         | -0.20±0.05        | ---                   | ---  | 6.             | 2.0 | 2.26± 0.26              | 011405-732007    | 3.6                     | 114.6                   | 2.19                                    | ---              | ---   | ---          | ---   | 0.01                                    |               |  |  |  |  |
| 18              | 011427.3-733314 | 01:14:27.21 | -73:33:13.74 | 1.10     | 0.39±0.11         | -0.42±0.14        | ---                   | ---  | 4.             | 2.7 | 0.46± 0.14              | 011427-733313    | 0.8                     | 8.6                     | 1.20                                    | ---              | ---   | ---          | ---   | 0.01                                    |               |  |  |  |  |
| 19              | 011615.3-732655 | 01:16:15.36 | -73:26:55.84 | 1.81     | 0.45±0.06         | -0.48±0.07        | 0.4                   | 1.0  | 0.8            | 3.7 | 0.73± 0.13              | 011615-732655    | 2.2                     | 66.7                    | 0.94                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 20              | 011627.7-731448 | 01:16:28.18 | -73:14:47.57 | 1.68     | 0.40±0.06         | -0.24±0.06        | 1.                    | 1.8  | 1.             | 3.0 | 0.71± 0.11              | 011628-731447    | 4.2                     | 137.4                   | 2.58                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 21              | 021125.0-401727 | 02:11:25.05 | -40:17:27.60 | 0.49     | 0.04±0.01         | -0.54±0.01        | ---                   | ---  | ---            | --- | 22.19± 0.37             | 021125-401727    | 9.5                     | 314.7                   | 1.47                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 22              | 023021.0-540504 | 02:30:21.03 | -54:05: 4.51 | 1.58     | -0.03±0.21        | -0.02±0.22        | 0.8                   | 0.80 | ---            | --- | 0.14± 0.06              | 023021-540504    | 0.9                     | 12.9                    | 2.11                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 23              | 023903.5-343640 | 02:39: 3.57 | -34:36:40.44 | 0.70     | -0.08±0.09        | -0.34±0.11        | 0.4                   | 2.0  | 0.4            | 2.5 | 0.82± 0.17              | 023903-343640    | 1.5                     | 25.1                    | 1.79                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 24              | 023933.0-342642 | 02:39:33.02 | -34:26:42.21 | 1.75     | 0.31±0.33         | 0.28±0.24         | 0.1                   | 2.0  | 0.2            | 2.5 | 0.11± 0.04              | 023933-342642    | 1.4                     | 10.6                    | 2.37                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 25              | 031231.0-764323 | 03:12:31.05 | -76:43:23.27 | 0.48     | -0.40±0.05        | -0.39±0.09        | 0.1                   | 1.4  | 0.4            | 3.2 | 0.50± 0.07              | 031231-764323    | 1.2                     | 8.0                     | 0.82                                    | 031231-764323    | 12.32 | 0.433        | 0.677 | 2.649                                   | ---           |  |  |  |  |
| 26              | 031313.5-550158 | 03:13:13.18 | -55:01:58.78 | 2.24     | 0.11±0.22         | 0.25±0.19         | 0.6                   | 2.0  | 1.             | 3.2 | 0.28± 0.08              | 031313-550158    | 1.8                     | 51.6                    | 0.97                                    | 031313-550158    | 14.63 | 0.404        | 0.676 | 1.299                                   | 0.094000      |  |  |  |  |
| 27              | 031622.3-663340 | 03:16:22.20 | -66:33:43.36 | 1.26     | 0.12±0.03         | -0.31±0.03        | 0.8                   | 2.0  | 1.             | 3.0 | 1.62± 0.10              | 031622-663343    | 1.0                     | 8.2                     | 0.76                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 28              | 031809.3-663004 | 03:18: 9.40 | -66:30: 4.99 | 8.57     | -0.78±0.12        | -0.67±0.43        | 0.4                   | 2.0  | 0.8            | 2.7 | 1.11± 0.56              | 031809-663004    | 1.0                     | 15.4                    | 2.68                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 29              | 031825.9-662843 | 03:18:25.26 | -66:28:48.29 | 4.94     | -0.38±0.04        | -0.56±0.09        | 0.2                   | 1.2  | 0.6            | 3.7 | 1.13± 0.15              | 031825-662848    | 0.9                     | 15.0                    | 2.87                                    | 031825-662848    | 14.50 | 0.803        | 0.443 | 2.015                                   | -1            |  |  |  |  |
| 30              | 032004.9-664208 | 03:20: 5.29 | -66:42: 7.40 | 4.04     | -0.10±0.10        | -0.22±0.12        | ---                   | ---  | ---            | --- | 0.28± 0.09              | 032005-664207    | 0.9                     | 12.5                    | 0.11                                    | 032005-664207    | 13.26 | 0.462        | 0.855 | 0.986                                   | ---           |  |  |  |  |
| 31              | 033312.2-361946 | 03:33:12.26 | -36:19:46.46 | 0.22     | -0.03±0.01        | -0.42±0.01        | 0.2                   | 1.8  | 0.4            | 2.7 | 26.80± 0.26             | 033312-361946    | 1.7                     | 16.7                    | 0.60                                    | 033312-361946    | 14.96 | 0.585        | 1.131 | 0.359                                   | ---           |  |  |  |  |
| 32              | 033646.1-355957 | 03:36:46.18 | -35:59:57.87 | 0.12     | -0.40±0.02        | -0.58±0.02        | ---                   | ---  | 0.2            | 3.2 | 7.37± 0.20              | 033646-355957    | 2.3                     | 42.6                    | 1.63                                    | 033646-355957    | 10.26 | 0.566        | 0.751 | 1.439                                   | ---           |  |  |  |  |
| 33              | 041610.4-554647 | 04:16:10.47 | -55:46:48.11 | 0.41     | 0.04±0.02         | -0.29±0.02        | 0.01                  | 2.0  | 0.2            | 2.2 | 9.64± 0.30              | 041610-554648    | 1.1                     | 6.7                     | 2.56                                    | 041610-554648    | 9.129 | 0.273        | 0.910 | 0.189                                   | ---           |  |  |  |  |
| 34              | 045427.6-662522 | 04:54:27.62 | -66:25:22.94 | 1.34     | 0.19±0.15         | -0.28±0.14        | ---                   | ---  | 0.01           | 1.0 | 0.26± 0.10              | 045427-662522    | 1.3                     | 16.1                    | 2.68                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 35              | 052517.4-672247 | 05:25:17.47 | -67:22:47.21 | 0.73     | 0.41±0.10         | -0.29±0.10        | 0.1                   | 1.2  | 0.4            | 3.7 | 0.33± 0.07              | 052517-672247    | 1.9                     | 52.7                    | 2.57                                    | ---              | ---   | ---          | ---   | 0.01                                    |               |  |  |  |  |
| 36              | 052528.8-672719 | 05:25:28.90 | -67:27:19.93 | 0.73     | -0.19±0.09        | -0.65±0.11        | 0.6                   | 0.50 | ---            | --- | 0.14± 0.02              | 052528-672719    | 1.1                     | 9.0                     | 1.13                                    | ---              | ---   | ---          | ---   | 0.01                                    |               |  |  |  |  |
| 37              | 052526.5-673125 | 05:25:26.55 | -67:31:25.73 | 6.09     | -0.97±0.04        | 0.44±0.43         | 4.                    | 0.50 | ---            | --- | 0.96± 0.25              | 052526-673125    | 1.3                     | 28.1                    | 2.66                                    | 052526-673125    | 15.19 | -0.02        | 0.952 | 2.836                                   | ---           |  |  |  |  |
| 38              | 053254.2-704028 | 05:32:54.26 | -70:40:28.89 | 0.53     | 0.09±0.07         | -0.35±0.07        | 0.2                   | 1.0  | 0.6            | 3.7 | 1.24± 0.16              | 053254-704028    | 1.0                     | 15.9                    | 2.99                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 39              | 053523.6-673450 | 05:35:23.68 | -67:34:50.00 | 1.97     | 1.00±0.24         | 0.61±0.19         | 0.2                   | 0.80 | ---            | --- | 0.07± 0.03              | 053523-673450    | 11.2                    | 369.8                   | 1.97                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 40              | 054006.6-405012 | 05:40: 6.66 | -40:50:12.20 | 0.23     | 0.04±0.03         | -0.75±0.03        | 0.2                   | 1.8  | 0.4            | 2.7 | 3.06± 0.15              | 054006-405012    | 1.4                     | 18.3                    | 2.77                                    | 054006-405012    | 12.26 | 0.474        | 0.625 | 1.771                                   | ---           |  |  |  |  |
| 41              | 054158.6-681542 | 05:41:58.68 | -68:15:42.18 | 0.83     | 0.09±0.13         | -0.24±0.13        | 0.2                   | 0.50 | ---            | --- | 0.89± 0.23              | 054158-681542    | 1.6                     | 45.2                    | 0.16                                    | ---              | ---   | ---          | ---   | ---                                     |               |  |  |  |  |
| 42              | 054557.4-694356 | 05:45:57.42 | -69:43:57.29 | 0.57     | 0.46±0.06         | -0.24±0.06        | 0.2                   | 0.80 | ---            | --- | 1.65± 0.17              | 054557-694357    | 1.3                     | 6.0                     | 2.59                                    | ---              | ---   | ---          | ---   | 0.01                                    |               |  |  |  |  |
| 43              | 054930.1-321508 | 05:49:30.14 | -32:15: 8.74 | 1.04     | -0.25±0.19        | -0.42±0.33        | ---                   | ---  | 2.             | 2.0 | 1.88± 0.21              | 054930-321508    | 9.1                     | 295.8                   | 2.44                                    | 054930-321508    | 14.79 | 0.925        | 0.724 | 0.831                                   | -1            |  |  |  |  |
| 44              | 060554.0-351808 | 06:05:54.08 | -35:18:      |          |                   |                   |                       |      |                |     |                         |                  |                         |                         |   |                  |       |              |       |   |               |  |  |  |  |







Table 6—Continued

| Src.<br># | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio    |                   | Thermal – Non thermal |      |                |      | F <sub>x</sub><br>[cgs] | Name<br>SUMMS J+ | S <sub>t</sub><br>[mJy] | S <sub>p</sub><br>[mJy] | R <sub>xr</sub><br>f <sub>&lt;99%</sub> | Name<br>2MASS J+ | 2MASS<br>K | SS Mag & Colors |       | R <sub>xi</sub><br>f <sub>&lt;99%</sub> | Redshift<br>z |
|-----------|-----------------|-------------|--------------|----------|-------------------|-------------------|-----------------------|------|----------------|------|-------------------------|------------------|-------------------------|-------------------------|---|------------------|------------|-----------------|-------|---|---------------|
|           |                 |             |              |          | $\frac{M-S}{S+M}$ | $\frac{H-M}{H+M}$ | N <sub>H</sub>        | KT   | N <sub>H</sub> | Γ    |                         |                  |                         |                         |   |                  |            | H – K           | J – H |   |               |
| 13        | 220201.8-315210 | 22:02: 1.87 | -31:52:10.20 | 0.05     | 0.36±0.03         | 0.89±0.00         | --                    | --   | 2.             | 3.0  | 264.46± 1.50            | 220201-315210    | 1.7                     | 45.3                    | 0.71                                    | 220201-315210    | 10.45      | 1.064           | 0.992 | 1.692                                   | 0.0086        |
| 14        | 225046.4-641700 | 22:50:46.47 | -64:17: 0.54 | 1.97     | 0.76±0.30         | 0.21±0.22         | --                    | --   | 0.8            | 2.0  | 0.14± 0.07              | 225046-641700    | 1.2                     | 31.1                    | 0.86                                    | -- -- -- --      | --         | --              | --    | --                                      | --            |
| 15        | 231358.6-424337 | 23:13:58.65 | -42:43:37.95 | 0.09     | 0.08±0.00         | -0.51±0.00        | 0.2                   | 1.2  | 0.4            | 3.5  | 290.87± 0.46            | 231358-424337    | 14.2                    | 470.3                   | 2.22                                    | -- -- -- --      | --         | --              | --    | --                                      | --            |
| Quasars   |                 |             |              |          |                   |                   |                       |      |                |      |                         |                  |                         |                         |   |                  |            |                 |       |   |               |
| 1         | 000020.4-322100 | 00:00:20.41 | -32:21: 0.32 | 0.27     | -0.10±0.04        | -0.34±0.05        | 0.2                   | 1.0  | 0.6            | 3.7  | 2.04± 0.20              | 000020-322100    | 9.7                     | 316.9                   | 1.24                                    | -- -- -- --      | --         | --              | --    | --                                      | 1.2750        |
| 2         | 021745.1-734723 | 02:17:45.27 | -73:47:23.48 | 0.26     | 0.12±0.02         | -0.33±0.02        | 0.1                   | 2.2  | 0.2            | 2.2  | 6.13± 0.23              | 021745-734723    | 4.9                     | 162.2                   | 1.57                                    | -- -- -- --      | --         | --              | --    | --                                      | --            |
| 3         | 031346.7-551148 | 03:13:46.62 | -55:11:49.50 | 0.54     | 0.13±0.03         | -0.41±0.03        | 0.1                   | 1.8  | 0.2            | 2.7  | 1.58± 0.09              | 031346-551149    | 7.3                     | 239.4                   | 0.21                                    | -- -- -- --      | --         | --              | --    | --                                      | --            |
| 4         | 042214.7-384452 | 04:22:14.74 | -38:44:52.84 | 0.15     | 0.05±0.02         | -0.40±0.02        | --                    | --   | 0.1            | 0.50 | 7.39± 0.24              | 042214-384452    | 6.6                     | 214.1                   | 0.70                                    | 042214-384452    | 14.16      | 0.790           | 0.462 | 1.465                                   | -- --         |
| 5         | 044017.1-433308 | 04:40:17.20 | -43:33: 8.37 | 0.07     | 0.15±0.01         | -0.31±0.01        | --                    | --   | 0.8            | 2.0  | 34.76± 0.50             | 044017-433308    | 176.1                   | 5868.0                  | 1.37                                    | -- -- -- --      | --         | --              | --    | --                                      | --            |
| 6         | 052257.9-362731 | 05:22:57.96 | -36:27:31.01 | 0.03     | 0.06±0.00         | -0.31±0.00        | 1.                    | 1.0  | --             | --   | 164.24± 0.55            | 052257-362731    | 606.5                   | 20217.0                 | 0.96                                    | 052257-362731    | 11.32      | 0.881           | 0.740 | 0.652                                   | -- --         |
| 7         | 052506.1-334305 | 05:25: 6.11 | -33:43: 5.42 | 0.12     | 0.16±0.01         | -0.27±0.01        | --                    | --   | 0.6            | 1.7  | 16.12± 0.13             | 052506-334305    | 5.9                     | 183.6                   | 0.77                                    | -- -- -- --      | --         | --              | --    | --                                      | --            |
| 8         | 064019.7-505819 | 06:40:19.77 | -50:58:19.53 | 0.35     | -0.20±0.04        | -0.45±0.06        | --                    | --   | --             | --   | 1.06± 0.12              | 064019-505819    | 1.5                     | 39.7                    | 1.15                                    | 064019-505819    | 14.46      | 0.552           | 0.619 | 0.726                                   | -1            |
| 9         | 074704.2-674440 | 07:47: 4.57 | -67:44:40.59 | 0.72     | 0.21±0.02         | -0.29±0.02        | 0.1                   | 1.8  | 0.4            | 2.7  | 1.21± 0.04              | 074704-674440    | 2.1                     | 27.7                    | 0.36                                    | 074704-674440    | 15.49      | 0.382           | 1.033 | 1.569                                   | -- --         |
| 10        | 105732.8-772429 | 10:57:32.84 | -77:24:29.53 | 0.35     | 0.58±0.04         | -0.36±0.04        | --                    | --   | 0.2            | 1.7  | 1.38± 0.13              | 105732-772429    | 30.4                    | 1013.0                  | 1.15                                    | -- -- -- --      | --         | --              | --    | --                                      | --            |
| 11        | 125359.6-405930 | 12:53:59.63 | -40:59:30.20 | 0.78     | 0.35±0.10         | -0.11±0.10        | 0.2                   | 1.2  | 0.4            | 3.2  | 2.05± 0.32              | 125359-405930    | 5.6                     | 178.4                   | 1.93                                    | -- -- -- --      | --         | --              | --    | --                                      | --            |
| 12        | 132859.9-312638 | 13:28:59.96 | -31:26:38.78 | 0.75     | 0.25±0.09         | -0.26±0.09        | 0.4                   | 0.60 | --             | --   | 1.11± 0.21              | 132859-312638    | 3.4                     | 99.2                    | 2.24                                    | -- -- -- --      | --         | --              | --    | --                                      | --            |
| 13        | 200324.1-325144 | 20:03:24.14 | -32:51:44.78 | 0.11     | 0.18±0.02         | -0.27±0.02        | 0.01                  | 2.0  | 0.2            | 2.5  | 9.51± 0.22              | 200324-325144    | 8.5                     | 279.1                   | 0.95                                    | 200324-325144    | 15.15      | 0.171           | 0.746 | 1.528                                   | -- --         |
| 14        | 200925.4-484953 | 20:09:25.35 | -48:49:53.75 | 0.04     | 0.06±0.00         | -0.45±0.00        | 0.01                  | 2.4  | 0.2            | 2.2  | 241.95± 0.72            | 200925-484953    | 38.5                    | 1282.0                  | 1.81                                    | 200925-484953    | 10.06      | 0.625           | 0.659 | 0.581                                   | 0.0710        |
| 15        | 201329.5-414735 | 20:13:29.52 | -41:47:35.83 | 1.12     | -0.15±0.16        | -0.03±0.18        | --                    | --   | 0.8            | 2.0  | 0.21± 0.07              | 201329-414735    | 1.2                     | 18.7                    | 1.43                                    | 201329-414735    | 14.04      | 0.732           | 0.719 | 0.714                                   | -- --         |
| 16        | 213924.1-423520 | 21:39:24.13 | -42:35:20.18 | 0.40     | -0.22±0.06        | -0.65±0.07        | 0.8                   | 1.4  | 1.             | 3.2  | 12.73± 1.27             | 213924-423520    | 2.6                     | 75.1                    | 0.72                                    | 213924-423520    | 13.16      | 0.696           | 0.714 | 0.758                                   | -- --         |
| 17        | 214905.1-303832 | 21:49: 5.13 | -30:38:32.65 | 0.13     | 0.05±0.02         | -0.29±0.02        | --                    | --   | 1.             | 2.0  | 6.46± 0.18              | 214905-303832    | 2.1                     | 40.9                    | 2.86                                    | -- -- -- --      | --         | --              | --    | --                                      | --            |
| 18        | 215155.5-302753 | 21:51:55.56 | -30:27:53.50 | 0.04     | 0.16±0.00         | -0.22±0.00        | 0.1                   | 1.6  | 0.2            | 2.7  | 90.97± 0.59             | 215155-302753    | 31.5                    | 1048.0                  | 1.17                                    | 215155-302753    | 14.95      | 0.770           | 0.788 | 1.942                                   | -- --         |
| 19        | 215705.9-694123 | 21:57: 5.90 | -69:41:23.57 | 0.03     | 0.05±0.00         | -0.34±0.00        | 0.4                   | 1.0  | 0.6            | 3.7  | 133.29± 0.68            | 215705-694123    | 499.4                   | 16647.0                 | 2.78                                    | 215705-694123    | 11.81      | 0.552           | 0.717 | 1.150                                   | -- --         |
| 20        | 215852.0-301332 | 21:58:52.12 | -30:13:30.67 | 0.01     | -0.06±0.00        | -0.55±0.00        | --                    | --   | --             | --   | 1090.28± 0.39           | 215852-301330    | 12.2                    | 401.2                   | 2.08                                    | 215852-301330    | 10.13      | 0.621           | 0.643 | 1.674                                   | -- --         |
| 21        | 235907.7-303739 | 23:59: 7.73 | -30:37:39.83 | 0.05     | 0.08±0.01         | -0.43±0.01        | --                    | --   | 0.6            | 1.2  | 257.75± 2.01            | 235907-303739    | 2.4                     | 64.4                    | 2.69                                    | 235907-303739    | 14.03      | 0.680           | 0.613 | 2.507                                   | -- --         |



Table 7 MGPS2/XMM: Galactic objects

| Src.<br>#                  | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio    |                   | Thermal - Non thermal |       |                |       | F <sub>X</sub><br>[cgs] | Name<br>MGPS J+ | F <sub>r</sub><br>[mJy] | R <sub>XR</sub><br>f <sub>&lt;99</sub> % | Name<br>2MASS J+ | 2MASS<br>K | S Mag & Colors |              | R <sub>XI</sub><br>f <sub>&lt;99</sub> % | Bib.<br>Ref. |
|----------------------------|-----------------|-------------|--------------|----------|-------------------|-------------------|-----------------------|-------|----------------|-------|-------------------------|-----------------|-------------------------|--|------------------|------------|----------------|--------------|--|--------------|
|                            |                 |             |              |          | $\frac{M-S}{S+M}$ | $\frac{H-M}{H+M}$ | N <sub>H</sub>        | KT    | N <sub>H</sub> | Γ     |                         |                 |                         |  |                  |            | <i>H - K</i>   | <i>J - H</i> |  |              |
| <b>Stars</b>               |                 |             |              |          |                   |                   |                       |       |                |       |                         |                 |                         |  |                  |            |                |              |  |              |
| 1                          | 110728.5-653126 | 11:07:28.54 | -65:31:26.38 | 1.17     | 0.54±0.13         | -0.16±0.13        | 0.40                  | 2.00  | 0.60           | 2.50  | 0.56± 0.12              | 110727-653125   | 15.6 ± 1.2              | 1.86                                     | 110728-653126    | 14.83      | 0.113          | 0.411        | 1.04                                     | 165          |
| 2                          | 134648.9-625237 | 13:46:48.95 | -62:52:37.42 | 7.44     | 1.00±0.03         | -0.16±0.15        | --                    | --    | --             | --    | 1.66± 0.47              | 134647-625233   | 24.2 ± 2.6              | 1.50                                     | 134648-625237    | 10.58      | 0.873          | 2.012        | 0.75                                     | 360          |
| 3                          | 160833.8-390009 | 16:08:33.89 | -39:00: 9.95 | 1.23     | 0.94±0.13         | 0.06±0.15         | 2.0                   | 1.20  | 2.0            | 3.25  | 0.34± 0.08              | 160833-390016   | 31.0 ± 2.1              | 2.94                                     | -- -- -- --      | --         | --             | --           | --                                       | 162          |
| 4                          | 174948.2-370129 | 17:49:48.21 | -37:01:29.20 | 1.86     | -1.00±0.19        | -1.00±****        | --                    | --    | --             | --    | 0.08± 0.05              | 174947-370135   | 16.0 ± 1.9              | 1.85                                     | -- -- -- --      | --         | --             | --           | --                                       | 226          |
| 5                          | 175015.5-370616 | 17:50:15.57 | -37:06:16.59 | 1.36     | 1.00±0.16         | -0.08±0.18        | --                    | --    | --             | --    | 0.47± 0.18              | 175015-370615   | 146.1 ± 4.6             | 0.85                                     | 175015-370616    | 13.44      | 0.137          | 0.621        | 2.81                                     | 167          |
| <b>Pulsars</b>             |                 |             |              |          |                   |                   |                       |       |                |       |                         |                 |                         |  |                  |            |                |              |  |              |
| 1                          | 105759.0-522656 | 10:57:59.00 | -52:26:56.57 | 0.04     | -0.69±0.01        | -0.62±0.02        | --                    | --    | --             | --    | 15.22± 0.10             | 105758-522655   | 21.0 ± 1.2              | 0.97                                     | -- -- -- --      | --         | --             | --           | --                                       | 285          |
| 2                          | 122421.8-640753 | 12:24:21.90 | -64:07:53.39 | 1.63     | 0.81±0.23         | -0.31±0.21        | 1.0                   | 0.900 | --             | --    | 0.16± 0.10              | 122422-640756   | 18.2 ± 1.9              | 1.03                                     | -- -- -- --      | --         | --             | --           | --                                       | 271          |
| 3                          | 170942.6-442905 | 17:09:42.78 | -44:29: 5.53 | 0.21     | 0.54±0.02         | -0.21±0.02        | 0.40                  | 1.80  | 0.60           | 2.75  | 12.05± 0.31             | 170942-442913   | 26.1 ± 2.2              | 2.25                                     | -- -- -- --      | --         | --             | --           | --                                       | 117          |
| <b>Masers</b>              |                 |             |              |          |                   |                   |                       |       |                |       |                         |                 |                         |  |                  |            |                |              |  |              |
| 1                          | 124331.6-625501 | 12:43:31.66 | -62:55: 1.44 | 3.90     | 1.00±0.17         | 0.52±0.14         | 4.0                   | 1.20  | 4.0            | 3.50  | 1.36± 0.28              | 124331-625509   | 286.5 ± 8.7             | 1.78                                     | -- -- -- --      | --         | --             | --           | --                                       | 335          |
| <b>Young Open Clusters</b> |                 |             |              |          |                   |                   |                       |       |                |       |                         |                 |                         |  |                  |            |                |              |  |              |
| 1                          | 080946.0-491640 | 08:09:46.03 | -49:16:40.20 | 0.15     | 0.45±0.02         | -0.16±0.02        | 0.40                  | 2.20  | 0.40           | 2.25  | 9.81± 0.28              | 080945-491641   | 700.7 ± 21.1            | 0.96                                     | 080946-491640    | 14.81      | 1.131          | 0.716        | 1.52                                     | 214          |
| 2                          | 104439.0-642102 | 10:44:39.02 | -64:21: 2.16 | 0.53     | 0.59±0.04         | -0.24±0.04        | 0.60                  | 1.60  | 0.80           | 3.00  | 2.96± 0.25              | 104439-642105   | 190.6 ± 7.8             | 1.84                                     | -- -- -- --      | --         | --             | --           | --                                       | 364          |
| 3                          | 104444.1-592125 | 10:44:45.52 | -59:21:26.07 | 8.95     | 0.10±0.03         | -0.56±0.04        | 0.20                  | 1.00  | 0.60           | 3.75  | 0.34± 0.06              | 104447-592131   | 15.3 ± 6.5              | 1.55                                     | 104445-592126    | 10.08      | -0.06          | 0.095        | 1.15                                     | 65           |
| 4                          | 165342.0-415140 | 16:53:42.00 | -41:51:42.60 | 1.19     | 0.31±0.12         | 0.27±0.09         | --                    | --    | 0.010          | 0.500 | 0.16± 0.02              | 165341-415148   | 16.6 ± 2.1              | 1.60                                     | 165341-415142    | 13.68      | 0.221          | 0.380        | 2.61                                     | 387          |
| 5                          | 165429.7-414929 | 16:54:29.66 | -41:49:28.42 | 1.27     | 0.24±0.07         | -0.59±0.08        | 0.40                  | 0.900 | --             | --    | 0.09± 0.02              | 165429-414923   | 25.2 ± 2.0              | 1.40                                     | 165429-414928    | 12.14      | 0.186          | 0.424        | 1.54                                     | 387          |
| <b>Gamma-ray sources</b>   |                 |             |              |          |                   |                   |                       |       |                |       |                         |                 |                         |  |                  |            |                |              |  |              |
| 1                          | 141242.9-640703 | 14:12:42.95 | -64:07: 3.43 | 0.74     | 0.95±0.06         | 0.01±0.09         | 2.0                   | 1.00  | 2.0            | 3.50  | 2.50± 0.37              | 141243-640706   | 204.9 ± 6.3             | 1.77                                     | -- -- -- --      | --         | --             | --           | --                                       | 450          |



Table 8 MGPS2/XMM: Extragalactic objects

| Src.<br>#           | Name<br>2XMM J+ | RA<br>h:m:s | DEC<br>d:m:s | err<br>" | Hardness ratio    |                   | Thermal – Non thermal |      |                |     | F <sub>x</sub><br>[cgs] | Name<br>MGPS J+ | F <sub>r</sub><br>[mJy] | R <sub>xr</sub><br>f <sub>&lt;99%</sub> | Name<br>2MASS J+ | 2MASS |       | Mag & Colors |       | R <sub>xi</sub><br>f <sub>&lt;99%</sub> | Redshift<br>z |
|---------------------|-----------------|-------------|--------------|----------|-------------------|-------------------|-----------------------|------|----------------|-----|-------------------------|-----------------|-------------------------|---|------------------|-------|-------|--------------|-------|---|---------------|
|                     |                 |             |              |          | $\frac{M-S}{S+M}$ | $\frac{H-M}{H+M}$ | N <sub>H</sub>        | KT   | N <sub>H</sub> | Γ   |                         |                 |                         |   |                  | K     | H     | - K          | J - H |   |               |
| Normal galaxies     |                 |             |              |          |                   |                   |                       |      |                |     |                         |                 |                         |   |                  |       |       |              |       |   |               |
| 1                   | 154807.1-473818 | 15:48: 7.15 | -47:38:18.43 | 0.22     | 0.71±0.02         | -0.03±0.02        | 0.8                   | 2.6  | 1.             | 2.2 | 94.45± 4.00             | 154807-473821   | 64.3 ± 2.4              | 1.23                                    | 154807-473818    | 11.40 | 0.742 | 0.967        | 1.162 | — —                                     |               |
| 2                   | 161405.5-630837 | 16:14: 5.59 | -63:08:37.13 | 1.67     | 0.33±0.03         | -0.40±0.03        | 0.4                   | 1.6  | 0.6            | 3.0 | 23.15± 1.48             | 161405-630827   | 16.7 ± 1.2              | 2.88                                    | 161405-630837    | 12.95 | 0.879 | 0.804        | 2.988 | — —                                     |               |
| Seyfert II          |                 |             |              |          |                   |                   |                       |      |                |     |                         |                 |                         |   |                  |       |       |              |       |   |               |
| 1                   | 163513.9-580447 | 16:35:13.95 | -58:04:47.90 | 0.16     | -0.03±0.02        | -0.41±0.02        | 0.1                   | 1.8  | 0.4            | 2.7 | 7.96± 0.23              | 163513-580447   | 111.9 ± 3.6             | 0.57                                    | 163513-580447    | 11.42 | 0.528 | 0.860        | 0.204 | — —                                     |               |
| Cluster of galaxies |                 |             |              |          |                   |                   |                       |      |                |     |                         |                 |                         |   |                  |       |       |              |       |   |               |
| 1                   | 132446.7-573630 | 13:24:46.77 | -57:36:30.92 | 0.58     | 0.52±0.05         | -0.74±0.07        | 1.                    | 0.60 | — —            | — — | 2.19± 0.27              | 132446-573631   | 3181.0 ± 126.6          | 2.32                                    | 132446-573630    | 11.61 | 0.867 | 1.133        | 1.750 | 0.019                                   |               |



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